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THE PERPETUATION OF ERROR IN OBSTETRICS AND GYNECOLOGY

CHAIRMAN'S ADDRESS

NORMAN F. MILLER, M.D.

ANN ARBOR, MICH.

The catastrophic events born of the present world conflict are a source of tremendous concern to us all. It is indeed a sad commentary on modern civilization to realize—as now we must—that war, an all-out tremendously destructive cataclysmic war, is still the world's answer to international difference of opinion. While our special field of endeavor may not bring us into immediate contact with the brutalities of this struggle, we as physicians are none the less conscious of increasing responsibility. Thus, we cannot fail our government in its effort to build a stronger and more modern defense. We recognize our duty in the program for improved national health, especially among women and children indirectly connected with the rearmament program. We should also recognize an increasing responsibility to medicine. Modern standards of medical care were attained through the efforts of countless physicians, scientists and others throughout the world. Now it becomes the responsibility of physicians still free to think about the future to shoulder the burden of keeping medicine on an even keel. Medical frontiers must be advanced, and gains already made must be protected. One particular aspect of this responsibility to medicine is made the theme of this address; namely, the perpetuation of error in obstetrics and gynecology.

Mistakes will be found wherever and whenever man is concerned. To err is human, but in medicine mistakes are both expensive and dangerous. In these uncertain times we may well pause long enough to reflect on our contribution to the perpetuation of error. Several circumstances combine to make our time particularly susceptible in this respect. These circumstances are:

1. The World War with its attendant distortion of mental processes.

2. Endocrinology, the beautiful romantic young maiden of modern medicine, who keeps us dizzy with her therapeutically provocative gyrations.

3. Overzealousness in the field of medical writing, the result of increasing competition and the perpetuation of a false standard for gaging a man's worth, based almost entirely on what he writes and less on his other marks of proficiency.

4. A loyal, devoted but blind adherence to obsolete ideas in both obstetrics and gynecology.

From the Department of Obstetrics and Gynecology, University of Michigan Medical School.

Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

Keeping these four circumstantial factors in mind, let us survey the situation. It is not difficult to point out errors perpetuated by our remote predecessors. We smile, rather feelingly perhaps, over their use of powdered toads for the treatment of vesicovaginal fistula. We recognize in blood letting a mighty poor treatment for placenta praevia. The abdominal instillation of mercury bichloride solution for peritonitis probably killed more patients than it cured. More recent examples of perpetuated error are to be found in the faulty interpretation of the endometrium prior to knowledge regarding its cyclic change; the long accepted belief that ovulation occurred at the time of menstruation and that the so-called safe period constituted the week of the midintermenstrual period. As we approach contemporary obstetrics and gynecology it becomes increasingly difficult to distinguish shadow from substance.

The mistakes of today are seldom discernible until tomorrow; consequently there can be no final judgment except in the court of time. But, as I see it, we are perpetuating error, errors both hazardous and far reaching in their scope.

ERRORS THAT ARE BEING PERPETUATED

In my opinion, the following are errors perpetuated today; thus:

Forcing young men and women to write in order to achieve recognition. Laboratory and clinical research and the recording of scientific fact are important, but skill in this respect is not always a fair gage of a man's worth, nor does it indicate the sum total of his ability. The blame for the fact that we find it necessary to digest an ever increasing number of half-baked adventures in medical research should not be placed on the ambitious young man and woman striving to forge ahead but, rather, on the faulty standard which has grown up in our midst and which today serves as the principal yardstick by which we judge a man's work. The reporting of facts, whether they are derived from laboratory research or from clinical investigation, is both commendable and desirable but it should be motivated by the accumulation of interesting and important scientific data or discovery rather than by the customary desirability of quantity production. By fostering an era wherein the older, experienced men do the reading and the younger, less experienced individuals do the writing, we have accumulated a medical literature which is long on quantity and, let this be said for the young men and women, surprisingly good in quality. The error is not so much the quantity reporting as it is the motivating factor back of it.

Attaching a commanding scientific importance approaching reverence to almost any research which includes the sacrifice of a few mice, rats, guinea pigs, squirrels or what have you. Laboratory research is basic; it is fundamental for the advancement of medicine. We cannot get along without it, nor would we care to do so. Yet the mere fact that something has been injected into mice or rats and some easily misinterpreted results derived therefrom does not always imply good work or yet the conclusion that human beings similarly treated would behave rat fashion. The importance of endocrinology and the great interest now accorded it have paved the way for many flighty ideas, slipshod experimentation and faulty deductions. The urge for priority and scientific recognition has given birth to more than one regrettable incident. The laboratory worker deserves full measure of sympathetic understanding, financial support and clinical backing. Many of our most potent therapeutic aids are the product of his untiring effort. We must recognize in the laboratory worker a human being, subject to the same shortcomings that beset us as clinicians. Let him not bedevil the clinician with enticing theories inadequately founded. Ambition, enthusiasm and desire for advancement and recognition are commendable qualities when properly guided and controlled. Many tests, particularly biologic tests, and other measurements which appear so precise when seen in the written word are often crude evaluations subject to the error imposed by the human equation.

Failure to recognize fully that potent gland preparations and their synthetic substitutes may cause harm; that their exact nature and mode of action are often a matter of fanciful theory and their widespread clinical use seldom truly remedial. Endocrinology is intriguing, its contributions to modern medicine are numerous and tremendously important. The harm as well as the good accruing to womanhood in the mass experiment now carried on throughout the world is something to think about. It is something that must and will be evaluated in the future. For the development of such an important field as endocrinology one cannot always demand proof positive before approving the use of gland products, but I would insist on a reasonable indication and a justifiable basis for their administration.

The excessive evil attributed to retrodisplacements of the uterus, giving further evidence of error perpetuated. Naturally a retroverted uterus may cause symptoms and, when it does, may require correction. Most retrodisplaced uteri, however, are asymptomatic and do not call for therapy. In this day of trial and error it is just as desirable to prove the cause and effect relationship between retrodisplacement and pelvic symptoms before operating as it was decades ago.

Delaying operation in ruptured tubal pregnancy. In this age of modern surgery, hospitalization, blood banks and lyophylized serum, procrastination is no longer justifiable. Excepting delay necessitated by environmental circumstances, early operation and the replacement of blood loss are clearly indicated in all cases of ruptured tubal pregnancy.

Our generous sacrifice of the uterus, tubes and ovaries, especially in middle-aged women. Disease may necessitate extirpation of these organs, but their removal is being overdone. The ovaries are just as important for normal endocrine balance and emotional stability in the female as are the testicles in the male. The fact that a 35 or 40 year old woman needs a hysterectomy does not necessarily justify castration. The presence of bilateral dermoid cysts in a young girl calls for more than surgery. It also demands conservation of healthy ovarian tissue if this is at all possible. Tubal pregnancy and ovarian hemorrhage due to rupture of a graaffian follicle or corpus luteum cyst do not always require oophorectomy. But it is neither necessary nor desirable to confine this discussion to gynecology, for error is also perpetuated in the major division of our specialty.

PERPETUATION OF OBSOLETE STANDARDS

In obstetrics we are still bound by tradition and guilty of perpetuating obsolete standards. How?

By allowing that good obstetric care can be cheap. It isn't and it cannot be cheap. Insurance companies allow the magnanimous sum of $25 for months of antepartum supervision, confinement and postpartum care. Patients, organizations, supervisors and even health authorities who should know better allow as little as $15 for the same service. They expect good care and generally get it. But, though the exchange of legal tender may be small, some one, often the practitioner, pays for the services rendered. Obstetric care based on present day standards requires a surgical environment and equipment, adequate assistance and mature obstetric judgment. These things cannot be obtained or maintained cheaply.

By favoring home confinement even when hospital delivery is available. I recognize that home delivery will remain a necessity for many years to come. Indeed, in some communities we may never get entirely away from it. In decrying this traditional method, in urging a newer and higher standard of obstetric care based on modern physical and scientific possibilities, I am not overlooking the fact that in the sparsely populated, rugged country of the frontier mother and among the extremely poor, especially in the rural areas of the South where there are neither hospitals nor good roads, the problem is indeed a real one. Much has been accomplished in these areas. More will be done in the future. But the fact that newer standards may not now appear attainable in these areas should not deter us from seeking the best for the parturient woman. The handicapped communities need our understanding and help, but they should not set the standard of quality for obstetric practice. Of course patients can be delivered in the home, and safely too, provided the necessary skill and equipment are made available. Surgery was formerly conducted in the home, but, unhampered by the shackles of tradition and guided by wise and forceful leaders, surgery moved on to its present high plane. Many of the arguments used to bring the surgically sick patient to the hospital can be applied and with equal justification to the obstetric patient. In voicing the belief that a properly equipped hospital is the place for a woman to have her baby, I should like to emphasize that properly equipped means a great deal more than the facilities offered by the average small community hospital today. Four walls and a light do not make a delivery room, and not every man with an M.D. is an obstetrician. Safety is not the only advantage of a properly conducted hospital delivery. There are in addition the change of environment, relief from home pressure and worry and mental and physical relaxation,

which is quite as important after nine months of pregnancy and hard labor as it is after many surgical operations.

By failing to recognize that student home delivery training and the certification of skill as indicated by a passing grade and graduation from the medical school contribute abundantly to the disrespect commonly displayed for obstetrics. Unconsciously, perhaps, the student comes to look on obstetrics as something he must take in his stride, something he masters early in his training on the way to bigger and better things. All physicians, young and old, good and bad, are, in the present way of things, permitted and expected to do obstetrics, but only the select, only those who have taken special postgraduate training, are freely granted the right to perform tonsillectomies, perineorrhaphies and hemorrhoidectomies.

By emphasizing the dangers associated with delivery on the one hand and frowning on short hospitalization on the other hand.

By emphasizing the time factor as the chief criterion in what constitutes the commonly accepted standard for normal labor. This leads to unwarranted and sometimes harmful intervention. The quality and frequency of the pains as well as the total duration in hours must all be considered in setting up an acceptable standard for normal labor.

Other things which may fall into the category of error are the innocuousness of premature rupture of the membranes as a means of inducing labor; the hazards of dry labor; insistence that only the low flap cesarean technic is correct for placenta praevia; interruption of pregnancy for pulmonary tuberculosis; myomectomy during pregnancy.

You may not agree with the views here expressed, but you cannot deny the challenge of the principles involved.

WHAT TO DO ABOUT IT

What shall we do about the perpetuation of error in obstetrics and gynecology? How can we best discharge our responsibility to medicine in this connection? I believe we should reaffirm and when necessary revise basic principles underlying accepted obstetric and gynecologic practice. We must shake off the stifling influence of tradition and reevaluate common procedure in the light of modern knowledge and present day possibilities. If we recognize our responsibility and accept this challenge, if we are unafraid and willing to think and plan in terms of a newer and better standard of medical care for the pregnant woman, then I foresee for obstetrics, for maternal and child health, a new and great future.

313 East Ann Street.

Self Confidence.—Emotional starvation is just as real as physical starvation. In order to grow emotionally, an individual must feel that he is a worth-while person, that he is needed somewhere by some one, that there is a place for him in his family group, in his social group, in a vocation and in the world. He must have, permeating all that he is and does, the certainty that he can confidently look himself and other people in the face. Then he knows security. Superficial observers describe it as self confidence or self respect. An individual with security might describe it as the background against which his life is lived.—Lloyd-Jones, Esther, and Fedder, Ruth: Coming of Age, New York, McGraw-Hill Book Company, Inc., 1941.

QUANTITATIVE TREATMENT OF PERNICIOUS ANEMIA

RESPONSE TO INITIAL MASSIVE DOSE OF LIVER EXTRACT IN RELAPSE

JOHN MARTIN ASKEY, M.D.
LOS ANGELES

Nine years ago Minot [1] said "Pernicious anemia like other deficient states should be treated on a quantitative basis—treatment should fill the body adequately with stores or a reserve supply of the substance." Treatment by injections of a bovine liver extract stores a deficient organ, the human liver, with a specific hemopoietic substance, which is apparently identical in normal bovine and human livers. This substance is stored in such livers and has certain specific characteristics: it is both heat stable and parenterally effective. These composite properties distinguish it from the anti-pernicious anemia material in other organs which is not effective when given by injection.[2] The liver of a patient who has pernicious anemia and is in relapse contains no detectable amount of this material, but after treatment with the bovine extract it yields a similar heat stable, parenterally effective substance. Since the liver is the only bovine organ that stores this particular hemopoietic substance,[2] it is probable that the liver is the only human organ in which it is stored.

Therefore, treatment is true substitution therapy, supplying an ultimately essential principle but doing nothing directly to remove the cause of the primary deficiency of Castle's intrinsic factor. Just how much of this essential substance the liver of the patient in relapse needs is not known. Since it contains no detectable amount, it must lack the amount stored in the normal human liver.

The chemical identity of the specific liver substance is unknown. Until it is known, the amount of hemopoietic substance in liver tissue must be expressed in units. A U. S. P. hemopoietic unit is determined by a biologic assay on a test patient in relapse. It represents the amount of liver which, given daily, has produced a satisfactory hemopoietic response. The number of U. S. P. hemopoietic units per hundred grams of bovine liver is fairly constant, averaging about 10 to 15 U. S. P. units.[3] The amount of hemopoietic substance in normal human liver in U. S. P. units has not yet been determined. My associates and I are conducting such biologic assays at present. By inference, if 1,500 Gm. of beef liver stores from 150 to 225 U. S. P. hemopoietic units, normal human liver should store a corresponding amount. This should represent approximately the amount lacking in the liver of a patient in relapse. This storage deficit, plus the amount needed immediately by the body for tissue repair, should represent probably a total bodily requirement of the liver principle of from 100 to 300 U. S. P. hemopoietic

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units. Although these amounts are necessarily approximate, the discrepancy between this apparent quantitative need of the body and the amount usually considered adequate in treatment [4] is so great that certain questions are unavoidable. Is the treatment that is considered adequate for Addison's pernicious anemia in relapse adequate in meeting the storage deficit? Why should relatively small doses of liver be given daily for a period of from one to two weeks in the face of such a considerable deficiency? Why should not a massive dose be given at once to replenish the liver?

To answer these questions, the following precise investigations must eventually be made. The storage deficit of the liver of the patient in relapse must be established by direct quantitative assay of a normal human liver rather than by inferential analogous data. The amount present in the normal liver should represent the amount lacking in the liver of the patient who has pernicious anemia and is in relapse. If the deficit is large, massive dosage will be justified.

Response of Nineteen Patients in Relapse to Massive Doses of Liver

Age	Sex	Liver Extract, Estimated Hemopoietic Units	Initial Red Blood Cells, Millions	Months After Injection 1	2	3	4	Months to Relapse	Condition on Admission	Clinical Improvement
38	♀	200	0.7	4.72	5.08	4.43	3.21	4	Extreme weakness; unable to walk; no cord changes; blood transfusion	Excellent
76	♀	220	1.78	4.84	5.00	5.44	5.39	5; red blood cells, 3.6 million	Third relapse; cord changes; anginal syndrome; hypertension	Excellent; angina relieved
65	♂	200	2.9	4.25	4.5	4.23	3.7	4	Several relapses; no cord changes	Excellent
64	♂	150	1.4	3.90	4.7	4.1	....	3; slight return of paresthesia	Ataxia; posterior column changes	Excellent; paresthesias returned at 3d month, so was given liver
64	♂	200	2.7	4.36	5.1	5.4	....	3 plus; now in 4th month	Dyspnea; palpitation; paresthesia; ataxia	Excellent
68	♂	380	1.42	4.79	5.2	6.0	6.1	10; red blood cells, still 5.87 million, but return of paresthesias	Posterolateral sclerosis for 6 years; used crutches 1 month; bed for 2 months before admission	Excellent
59	♂	400	1.35	2.89	4.3	4.3	Sick with influenza; no blood count	6; red blood cells, 3.6 million; appetite poor	Ataxia; posterior column changes; edema of legs and scrotum	Excellent; edema disappeared
70	♂	400	0.95	3.96	4.7	4.9	4.74	6 plus; red blood cells, 4.15 million in 6th month	Ataxia; posterior column changes; in institution 4 years before for psychosis	Excellent; apparently normal
61	♀	380	1.14	3.28	4.28	4.5	5.4	5; red blood cells, 4.12 million, but less strength	Unable to walk; posterior column changes	Excellent; doing housework
38	♀	400	1.15	4.49	6.0	5.6	5.4	9 plus; red blood cells, 4.3 million in 10th month; no complaints	Unable to walk; posterior column changes	Excellent; doing housework
53	♂	400	1.31	3.87	5.1	4.3	Not located	Not located after 3d month	No cord involvement	Excellent until 2d month when typhus fever developed
37	♂	400	0.5	4.1	6.0	6.4	Not located	Not located after 3d month	In severeal institutions for psychosis for 8 years; in extremis; blood transfusion	Excellent; at work; apparently normal
56	♀	300	2.8	4.45	5.6	4.17	4.9	Given liver by mistake at 4th month	Ataxia; posterior column changes; hypertension; coronary sclerosis; several relapses	Excellent for 1 year with treatment; died of coronary thrombosis
68	♀	300	1.1	3.8	4.48	4.7	....	3 plus; in 4th month no complaints	Ataxia; posterior column changes; temperature 102 F.; acute bronchitis 14 days	Excellent; ataxia and paresthesia gone at 3 months
76	♀	300	2.3	3.9	4.9	4.5	3.32	4; paresthesias; fatigue	Several relapses; ataxia; posterior column changes; crutches used for several years	Excellent; ataxia much better
84*	♀	300	2.4	4.2	4.8	5.5	6.23	4 plus; in 5th month no complaints	Pernicious anemia since 1934; pellagra developed in last year; ataxia; posterior column changes	Excellent; pellagra lesions gone in 2 months; ataxia improved
66	♂	400	1.53	3.23	3.6	3.4	....	No complete hematologic remission	Extreme weakness; shock; blood transfusion; no cord lesion	Excellent clinical response save for blood
66*	♂	300	2.3	3.6	3.8	3.9	....	No complete hematologic remission	Ataxia; posterolateral column changes	Good; not the quick subjective pick-up of others
86	♀	200	2.4	4.1	3.74	3.6	....	No complete hematologic remission	Ataxia; posterior column changes; senile arteriosclerosis	Excellent for 1 month; 2d month paresthesias returned
Average 61	..	304	1.69	4.03	4.75	4.70				

* These patients received solution liver extract purified (Lilly) 15 U. S. P. units to the cubic centimeter. All others received reticulogen (Lilly) estimated at 20 U. S. P. units to the cubic centimeter. Reticulogen contains 100 international units of vitamin B_1 per cubic centimeter in addition.

4. Solutions for Parenteral Administration, Dosage, in New and Nonofficial Remedies, Chicago, American Medical Association, 1940, pp. 327-330.

Whether massive doses are stored or partially excreted must be determined. Direct proof must await the opportunity to use the livers of patients treated with massive doses for quantitative biologic assays. In this way the amount of storage from a single massive dose may be determined. Indirect estimation of the degree of storage after massive treatment is possible only by observing the response as indicated by changes in the blood. The length of time during which the blood level remains normal after a massive dose should reflect the amount of storage. This report deals with the response of patients in relapse to massive doses of liver extract.

During the last three years, 22 patients who had pernicious anemia and who were in relapse have been treated with massive doses of liver extract, given on two successive days. In most instances the amount given was considered to be in excess of that which might be stored in the liver. Nineteen of these patients have been followed for at least three months, and the results obtained are recorded in the accompanying table. In 12 of the 19 the initial red blood cell count was between 1 and 2 million; in 7 it was between 2 and 3 million. The average age was 61 years, the range being from 37 to 86 years. There were 10 men and 9 women. These patients were in severe relapse and 7 had had several relapses due to inadequate treatment. Three needed immediate transfusions because of dangerously low blood volume; several presented the signs of severe cord damage. Arteriosclerosis was common. Two had previously been admitted to institutions because of psychosis, prior to recognition of the pernicious anemia.

An initial dose of 1 cc. of reticulogen-Lilly or solution liver extract purified-Lilly [5] was given intramuscularly to detect any latent sensitivity. The next day the massive dose was given into the buttocks. The total dosage varied between 10 and 20 cc.; a total equivalent to from 150 to 400 U. S. P. hemopoietic units. No other liver was given parenterally or orally during the observation period which followed.

Of the patients who were followed during a period of three or more months, the average erythrocyte count at the end of one month was 4.05 million, at the end of two months 4.75 million and at the end of three months 4.70 million. The 3 whose counts remained below 4 million at the end of two months were a woman aged 86 and 2 men aged 66. By roentgenologic study 1 of the men was found to have indications of an intrinsic duodenal lesion. The other man presented evidence of extensive cord damage and gave a history of previous hematemesis. Complicating bleeding gastrointestinal lesions were not excluded in the last 2 patients. The clinical responses of the other 16 were excellent and the hemopoietic response was good.

Arbitrarily, a decrease of the red blood cell count to less than 4 million was considered evidence of a relapse. Any increase of paresthesia or definite loss of strength was considered as indicating a relapse, regardless of the blood count. As already noted, 3 of the 19 failed to have a count of 4 million at the second month following the initial massive dose. Of the remaining 16 patients 1 was found to have relapsed at three months, 3 at four months, 2 at five months, 2 at six and 1 at ten months after the initial treatment. Seven still have red blood cell counts above 4 million, 4 at three, 1 at four, 1 at six and 1 at nine months after the initial treatment.

A favorable or unfavorable response could not be predicted on the basis of age, degree of arteriosclerosis, amount of involvement of the nervous system or number of previous relapses. The best hemopoietic result was obtained in a patient who had been crippled for six years. Ten months after treatment, although his erythrocyte count was 5.87 million, liver extract was readministered because of increased paresthesias. The poorest result was in an 86 year old woman; however, a good response was obtained in 2 other aged women, 1 aged 76 who had severe arteriosclerosis, hypertension and angina pectoris, and the other aged 84 who had had several relapses and who was suffering with coexistent pellagra.

COMMENT

Recently, the treatment of pernicious anemia in relapse has tended toward large doses, far above the amount needed for a satisfactory blood response. The amount of liver extract required to produce a satisfactory response of the blood in the average patient is said to be 1 U. S. P. unit a day. Thus liver containing 60 U. S. P. units would be an adequate dose to be used during a period of two months in the average patient. Both West [6] and Haden [7] advocate liver containing more than 300 U. S. P. units for such a period, to be given in twenty or more injections. Osgood [8] states that any error in treatment should be on the side of excess. Such material in excess of the amount needed for a satisfactory blood response is directed at producing adequate storage, which should mean normal storage. Optimum results should be obtained by a continuous normal storage, with a normal amount of the liver principle available to the body at all times. This can be possible only if the liver is normally or completely stocked. In relapse, when the liver is apparently totally depleted, treatment should be directed at a quick restoration of the deficient material. The criteria for adequate treatment should be such as would guarantee that the liver in relapse would be stocked quickly to capacity. Such standards have not as yet been determined. The present standards for adequate treatment are satisfactory only for the elevation and maintenance of the blood count.

No precise data are available on which to establish a dosage which will assure in relapse a quick optimum liver storage. No precise data are available on which to establish a dosage in remission which will be adequate to maintain an optimum liver storage. Maintenance doses are defined in terms of maintenance of a normal blood count and of nonprogression of neurologic signs and symptoms, not in terms of maintenance of optimum liver storage. Minot [1] believes that a satisfactory blood response probably can be elicited and maintained without any assurance that the liver is stored to capacity.

Biologic assays made of the livers of treated patients with normal blood have been qualitative tests. They are proof only that enough of the hemopoietic principle has been stored to cause a maximum reticulocyte count in from seven to ten days. This would be only 7 to 10 U. S. P. units.

5. Solution Liver Extract Purified-Lilly—15 U. S. P. units per cubic centimeter; reticulogen is estimated to contain 20 units per cubic centimeter; in addition it contains 1,000 international units of vitamin B_1 per cubic centimeter.

6. West, Randolph, in discussion on Treatment of Blood Disorders: Conferences on Therapy by Members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, J. A. M. A. **115**: 41 (July 6) 1940.

7. Haden, R. L.: Principles of Hematology, ed. 2, Philadelphia, Lea & Febiger, 1940, p. 194.

8. Osgood, E. E., in discussion on papers of Rosenthal, Murphy and Howard and Fowler and Barer, J. A. M. A. **112**: 114 (Jan. 14) 1939.

Adequate nutrition of nerve tissues is assumed if the blood is normal in the number and size of the red blood cells. Since such a normal blood count gives no assurance that the liver is stocked to capacity, it can hardly be an acceptable criterion for the optimum response of nerve tissue.

One must ask how near the reserve supply is to normal. The problem in treatment is to determine the original deficit in liver storage, how quickly it can be corrected and what maintenance dose is needed to keep the liver stored to capacity. This probably will be an individual matter, even as the need for liver varies from one patient to another. The same dose of liver extract conceivably might maintain a normal blood count with no liver storage in 1 patient, as pointed out by Minot,[1] or might maintain a normal count and establish considerable storage in another patient. The amount of the reserve supply effected in the patient should be indicated by the duration of the remission after administration of liver is stopped.

Strauss [9] has reported a study of 15 patients who had pernicious anemia of an apparently equal and mild degree. They had been maintained at a level of 4.5 million red blood cells for several years by a monthly dose of liver containing 10 U. S. P. units. The liver was stopped and they were allowed to have a relapse. Despite the maintenance of a normal blood level in each of these patients as a result of the small doses, the length of time during which remission was maintained after liver therapy was discontinued was from two to twenty-seven months. If the period between the discontinuance of therapy and the relapse is accepted as a measure of the amount of storage of the essential substance in liver extract, then the experience of the patients in this group is an excellent demonstration of variations which may be expected, at least when similar amounts of extract are administered.

Twelve of these patients were then given 160 U. S. P. units during a period of one week and again allowed to have a relapse.

The length of time required to produce the second relapse was the same as that observed in the first experience for 6 patients but greater in 5. In only 1 was the time between therapy and relapse greater when the first plan of treatment was used. These data suggest that greater liver storage had been effected by the large dose than by the repeated small doses. At least the storage was not less, and it was accomplished quickly. The great variability of storage in apparently adequately treated patients appears to be significant.

Of our 19 patients who were treated when they were in relapse, 16 had remissions of an average of several months' duration after a single massive dose of liver extract.

Our data fail to answer several questions. Could not a smaller amount have produced the same results? This must be determined. Would not the amount of liver used have maintained a normal blood count longer if given at intervals in small doses? Undoubtedly this is true, but I feel that the liver would not have been stored to capacity.

Our results indicate that the majority of patients in relapse can be given a single massive dose which will establish and maintain a normal blood count with satisfactory clinical improvement for several months. These data also indicate that the liver storage deficiency may be largely replenished by an initial massive dose. Since the object is to keep the liver in a state of optimum storage, injections at long intervals following the first injection would not be advisable. Replacement of utilized material should be made at regular and not at infrequent intervals. Monthly injections of suitable amounts would seem sufficiently frequent.

Further data are necessary to determine the amount of the initial dose needed to effect complete liver storage in the individual case and the dose needed to maintain complete liver storage. Investigation in the future must be directed at determining how quantitatively to correct the fundamental deficiency in the disease rather than how to correct the symptoms and signs.

9. Strauss, M. B., and Pohle, F. J.: Duration of Remissions in Pernicious Anemia with Liver Therapy: Efficacy of Massive Doses Administered at One Time, J. A. M. A. **114:** 1318-1320 (April 6) 1940.

CONCLUSION

1. Satisfactory clinical, hemotologic and neurologic responses, judged by available criteria, were obtained in 16 of 19 patients who had pernicious anemia and were in relapse as a result of the injection intramuscularly of a massive dose of liver extract.

2. A massive initial dose to stock the liver, followed by monthly doses to maintain adequate storage, appears to be sufficient to give optimum results in the majority of such patients in relapse.

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VITAMIN DEFICIENCIES AND THE SMALL INTESTINE

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Functional changes in the small intestine demonstrable by roentgen examination were first noted in a case of nontropical sprue.[1] Shortly thereafter they were observed to occur in chronic idiopathic steatorrhea,[2] in association with the mixed deficiency states complicating chronic ulcerative colitis [3] and in tropical sprue.[4] They have likewise been shown to occur in infantile celiac disease.[5] It is of interest that, although all these conditions may be and often are accompanied by a macrocytic anemia, the characteristic changes in the small intestine have not been observed in pernicious anemia.[6]

The deficiency pattern of the small intestine, however, may occur in a variety of conditions, as nephrosis and diabetes insipidus,[7] icterus with absence of bile from the intestine,[8] diseases of the mesenteric lymphatics, and intra-abdominal cancer. It is probably significant that exactly the same pattern is presented by the intestine

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2. Snell, A. M., and Camp, J. D.: Chronic Idiopathic Steatorrhoea: Roentgenologic Observations, Arch. Int. Med. **53:** 615-629 (April) 1934.

3. Mackie, T. T., and Pound, R. E.: Changes in the Gastrointestinal Tract in Deficiency States with Special Reference to the Small Intestine: A Roentgenologic and Clinical Study of Forty Cases, J. A. M. A. **104:** 613-618 (Feb. 23) 1935.

4. Mackie, T. T.; Miller, D. K., and Rhoads, C. P.: Sprue: Roentgenologic Changes in the Small Intestine, Am. J. Trop. Med. **15:** 571-589 (Sept.) 1935.

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of the normal newborn infant.[6] In the experimental animal these changes have been produced by lowering the plasma proteins by plasmapheresis.[9] It is obvious, therefore, as Golden [6] has pointed out, that the roentgenologic findings alone do not permit an accurate differential diagnosis. However, when they are considered together with the clinical picture, the significance of the changes in the small intestine will be evident in most cases.

The deficiency pattern is not accompanied by extensive or advanced anatomic changes in the small intestine. In the earlier reports of the pathology of experimentally produced deficiency states in animals and of certain conditions complicated by deficiency disease in man, emphasis was laid on atrophy of the intestinal wall, ulceration and cellular infiltration. More carefully controlled studies, particularly the avoidance of postmortem autolytic changes and recognition that the atrophy of the intestine is part of the general wasting process of inanition rather than a specific response, have invalidated much of this.[10] In our own [3] early studies microscopic examination of sections from 4 cases showed only edema of the mucosa and submucosa and slight infiltration by mononuclear wandering cells and round cells. In addition to these changes, varying degrees of muscle fiber degeneration occur, and vacuolization of cells in both the myenteric and submucosal plexuses has been observed.[6] It is obvious that such changes must adversely affect intestinal motor physiology and it is logical that the resulting disturbances may be permanent when cellular degeneration is extensive.

When the deficiency pattern of the small intestine was first described, evidence relating it to avitaminosis was incomplete, based in part on association with the general clinical phenomena of mixed deficiency states and in part on response to therapy. Thus in our first reports we did not feel justified in exceeding the statements "They are constantly present and most marked in the cases showing advanced deficiency states. In the milder cases the parallelism is not exact. While the evidence does not warrant definite conclusions, the observations suggest that these changes in the small intestine are related to the deficiency states and perhaps play a role as a conditioning factor in their development" [3] and "The intensity and extent of the abnormalities in the small intestine vary directly with the severity of the clinical picture in sprue, and they regress under specific therapy. It is suggested that they may play a part in the defective absorption or utilization of essential food factors." [4]

Since that time more conclusive evidence has been obtained. The specific therapy of sprue referred to consisted of the parenteral administration of heavy dosage of crude liver extract, a well recognized and rich source of vitamin B complex.

The deficiency pattern has been observed to develop in dogs maintained on a B deficient diet.[11] In such animals administration of thiamine and riboflavin is said to be ineffective, while nicotinic acid caused some improvement but was less effective than the whole vitamin B complex.[12]

In studies of mixed deficiency states in man previously published we were unable to establish a correlation between the occurrence of the changes in the small intestine and the levels of the plasma protein and chloride, the presence of gastric hypoacidity or anacidity, or the concomitant existence of demonstrable gastrointestinal food allergy. There likewise was no significant correlation with the fasting blood levels for carotene, vitamin A or ascorbic acid. Clinical evidence of vitamin B complex deficiency, however, was noted in a high proportion of the cases yielding positive roentgen findings.[13] In experimentally induced B complex avitaminosis in man, Elsom observed the development of delayed gastric emptying, reduced motility of the small intestine and increased caliber of the jejunal loops. Neither thiamine nor riboflavine significantly altered these findings. Marked improvement occurred, however, following the administration of yeast.[14]

Although the exact mechanism underlying these changes has not yet been demonstrated, the evidence is suggestive. The intestine of the normal newborn infant presents the picture seen in deficiency states in the adult. After the first few months of life the normal adult pattern appears. Although incomplete anatomic development of the myenteric plexus has not been shown, it is well established that the normal adult function of the nervous system is not achieved until some months after birth. The presence of the positive Babinski sign is an illustration. It would appear probable, therefore, that in the early months the intrinsic nervous mechanism of the intestine is incompletely developed or incapable of performing normal adult function, thereby producing the intestinal roentgenologic pattern of the infant. This probability is supported by the demonstration of degeneration of the intramural nerve cells in the intestine of a human adult suffering from deficiency disease.

It is well established that the function of nervous tissue may be impaired by avitaminosis and that this does not necessarily imply anatomic change. Although certain functional changes responding rapidly to therapy may be ascribed to thiamine deficiency, it has not been proved that neural degeneration is produced by lack of this factor.[15]

It would appear therefore, as Golden has suggested, that the deficiency pattern of the small intestine is to be explained by interference with intramural nerve function. This is probably the expression of a vitamin B complex deficiency which may or may not be accompanied by degeneration of the intrinsic nervous system. The response to therapy necessarily will depend on the relative predominance of functional or structural change.

The development of these changes in the small intestine is accompanied by defective absorption of the products of digestion. In sprue and in idiopathic steatorrhea, fat absorption is blocked. Likewise in sprue large amounts of liver extract by mouth are frequently ineffective, whereas parenteral administration of much smaller quantities of the same preparation is followed by

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dramatic improvement.[16] Oral dextrose tolerance tests produce an abnormally small rise of blood sugar, while the intravenous test yields a normal curve.[17] Direct measurement of the rate of disappearance of dextrose from the intestine in deficiency disease likewise has demonstrated a retarded rate of absorption,[18] and similarly the absorption of potassium iodide may be greatly delayed.[19]

The concept that multiple physiologic disturbances occur in the presence of avitaminosis is in keeping with present knowledge of the function of the vitamins. Until comparatively recently the vitamin deficiencies were considered largely in terms of anatomic pathology, and disturbances of physiology considered specific for the individual food factors.

These earlier concepts have been and are progressively being modified by research in nutrition and biochemistry. It is evident now that the vitamins play an essential role in the metabolism of all living cells by virtue of their function as the prosthetic or chemically active fraction in the coenzyme systems necessary for normal intracellular metabolism. This is particularly true of the B complex group, of which thiamine, riboflavin and nicotinic acid amide have been definitely shown to act in this fashion. The chemical structure of pyrixidine and of vitamins E and K is such as to render such action probable. Lacking these substances, cellular metabolism is impaired and function altered. The resulting intracellular functional disturbance, however, for the most part cannot be ascribed to deficiency of a particular single factor. Thiamine presents the most notable exception because of its intimate relation to the metabolism of carbohydrate. In the absence of this substance pyruvic acid and lactic acid accumulate in the blood, and the response to insulin is diminished.

Both chemical and clinical evidence indicate that these functions of the vitamins are so closely interrelated that insufficient supply of one may impair the utilization of others and that in consequence there is no disturbance of function which can be ascribed strictly to the specific effect of a single deprivation.

It follows as an obvious corollary that when intracellular metabolism is disturbed there must be a concurrent effect on particular tissues and physiologic systems of tissues. It is evident that the avitaminoses must exist at two levels. The first, that of disturbed physiology, accompanies the earlier stages of interference with the chemical processes of the cells. Symptoms may be produced and certain physiologic disturbances may become evident. Physical signs, however, which depend on structural alteration will be absent. When the deficiency is more severe or of sufficiently long duration the second level is reached, that of anatomic change, which is manifest in the classic physical signs of advanced vitamin deficiency disease. The concept of avitaminosis at the physiologic or subclinical level adequately explains the variety of clinical conditions in which the deficiency pattern has been observed.

The prevalence of these changes immediately raises the question of the incidence of avitaminosis. Much attention has been directed recently to the average American diet. It is becoming increasingly apparent that primary dietary deficiencies are far more prevalent than is generally believed. This is in large part attributable to the very high per capita consumption of refined starches and sugars which yield no vitamins and yet increase the physiologic requirements for them. Moreover, preliminary studies strongly suggest that many therapeutic diets are inadequate to fulfil the nutritional requirements of the healthy adult, to say nothing of the individual whose vitamin requirements are increased by the elevated metabolism accompanying fever.[20] The incidence is still further augmented when the varied conditions capable of producing secondary or conditioned deficiencies are considered.

SUMMARY

In our experience the roentgenologic changes in the small intestine included in the term "deficiency pattern" have proved of great value in the clinical management of certain cases. When considered in the perspective of the whole clinical picture they have definite diagnostic significance.

Since it has been observed that these changes vary directly with the severity of the clinical condition and regress to a variable degree under specific therapy, they afford a means of evaluating the efficacy of the therapeutic regimen and they likewise afford evidence of prognostic significance.

CONCLUSIONS

1. Characteristic roentgenologic changes are demonstrable in the small intestine in the presence of deficiency states.

2. Since these changes are present in the newborn infant and disappear in the early months of life, and since degeneration of the nerve cells of the myenteric plexuses in an adult presenting the deficiency pattern has been demonstrated, it is probable that they result from interference with the intrinsic nervous mechanism of the small intestine.

3. The deficiency pattern may be produced in animals and man subjected to experimental B complex deficiency. When occurring naturally it is accompanied by a high incidence of clinical indications of B complex deficiency. If irreversible changes have not occurred it responds to the therapeutic administration of heavy dosage of the B complex in the form of crude liver extract or yeast. It does not respond to thiamine, riboflavin or nicotinic acid and consequently must depend on some factor in the vitamin B complex other than these substances.

4. The deficiency pattern is accompanied by interference with the function of absorption and may therefore contribute to the establishment of an ascending spiral of progressing deficiency disease.

5. The deficiency pattern when considered with the whole clinical picture may have both diagnostic and prognostic significance.

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THE SMALL INTESTINE IN VITAMIN B DEFICIENCY

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The association of abnormalities of the small intestine with nutritional disorders in which vitamin deficiency plays a part has been pointed out by a number of writers. Mackie [1] in 1933 mentioned such abnormalities in a case of sprue. In a series of cases of "chronic steatorrhea" Snell and Camp [2] in 1934 described dilatation, hypomotility and smoothing or exaggeration of the mucosal contours in this portion of the digestive tract, changes which were readily demonstrable by the use of a barium sulfate meal. Similar observations were made by Mackie and Pound [3] (1935) in a series of cases of tropical sprue; by Mackie, Miller and Rhoads [4] (1935) in ulcerative colitis; by Pendergrass and Comroe [5] (1935) in a case in which there was chemical and clinical evidence of hypocalcemia, and by Golden [6] (1936) in infantile celiac disease. Snell and Camp expressed the belief that these abnormalities of the small intestine were probably not characteristic and could be produced by other conditions. Their prediction has proved correct. They noted also that proper treatment was followed by a change in the intestinal pattern toward the normal.

After these earlier contributions, continued study of the small intestine by roentgen methods has shown that analogous changes of varying degree may be discovered in patients with abdominal symptoms but without the usual clinical manifestations of recognized vitamin deficiencies, as well as in patients with recognized visceral disease, such as peptic ulcer. Appropriate treatment is followed by improvement in the intestinal picture. Repeated observations during treatment have given important information concerning the evolution of these changes, which will be discussed further hereafter.

The purpose of this paper is to review briefly the observations which have been made on the small intestine in a series of more than 100 cases in which some deficiency condition appeared to play either a major or a minor part. Unfortunately, at present the only evidence of accuracy of a diagnosis of vitamin deficiency is the patient's response to specific treatment, in particular by the vitamin B complex, which can hardly be considered positive proof in the scientific sense, although the clinical result is satisfactory.

The term "deficiency state" is used in a broad sense to mean a lack of some important substance, such as a vitamin or a protein, which is necessary for the proper functioning of the organism.

Deficiency states may conveniently be divided into two groups, (1) primary and (2) secondary. A primary deficiency is one which occurs without obvious cause, in which a chronically deficient diet may be a factor, e. g. sprue or pellagra. A secondary deficiency is one which is associated with, or perhaps caused by, recognizable disease of the alimentary tract, such as cancer or regional enteritis.

TECHNIC

Abnormalities of the small intestine are often recognizable incidentally during the usual roentgen procedures intended primarily to disclose disease of the stomach and the duodenum. They are best shown, however, by a special procedure which I have come to call a "small intestine study." This, in brief, consists of a series of roentgenograms of the abdomen taken at approximately half-hourly intervals after the ingestion by a patient of a barium sulfate suspension in the morning during fasting. At present I am using 4 ounces (120 Gm.) of chemically pure barium sulfate in physiologic solution of sodium chloride made with distilled water. The usual observations of the stomach and the duodenum may be made at the beginning if desired. The films are developed and inspected immediately, and the routine is modified if it seems advisable. Fluoroscopic examinations are made two or three times during the procedure, usually with pressure films of the terminal part of the ileum or of other parts if indicated. Food is usually given at five hours, or earlier if the barium has entered the cecum. The series is concluded within five or six hours, or sooner if all the needed information has been obtained.

NORMAL SMALL INTESTINE

It is obviously necessary for the observer to be thoroughly familiar with the appearance of the normal small intestine. A review of its anatomy and physiology has been given elsewhere [7] and cannot be repeated here. The essential points are summarized in figure 1.

ABNORMALITIES OF SMALL INTESTINE IN DEFICIENCY STATES

The abnormalities of the small intestine associated with vitamin deficiencies appear to vary with the severity and duration of the disorder. Under treatment they may begin to change promptly, but the improvement in the roentgen appearance of the small intestine usually lags behind the clinical improvement in the patient.

It is difficult to illustrate the abnormalities described, as one roentgenogram cannot reproduce the impression obtained from a series on the small intestine. To show some of the elements which go to make up the whole picture, selections of a portion of the intestine from a number of cases are shown in figure 2.

MOTILITY

1. *Hypermotility.*—In the earlier, less advanced stages the barium sulfate may be passed rapidly through the jejunum, reaching the lower part of the small intestine in a quarter of an hour and entering the cecum in less than half an hour. Occasionally the opaque material seems to rush through the jejunum and slow up markedly after reaching the proximal part

From the Departments of Radiology of the Presbyterian Hospital and of Columbia University College of Physicians and Surgeons.

Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

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of the ileum. Sometimes it is propelled ahead so rapidly that the upper loops of the jejunum are never outlined satisfactorily.

2. *Hypertonicity.*—In the earlier stages the lumen is often reduced to one half, one fourth or even less of its normal width. This is often most noticeable in the middle third of the small intestine but is present in the upper loops of the jejunum, usually associated with hypermotility. Sometimes the opaque material seems to be propelled forward through a narrow tube, as the wall ahead of the wave of contraction is not relaxed as it normally is; after the wave passes the lumen remains narrow.

3. *Hypomotility.*—In the more advanced stages the movement of barium sulfate through the intestine is slow; it may not reach the cecum in six hours or longer.

4. *Hypotonicity (Dilatation).*—The lumen of the intestine in the advanced stages may vary from normal

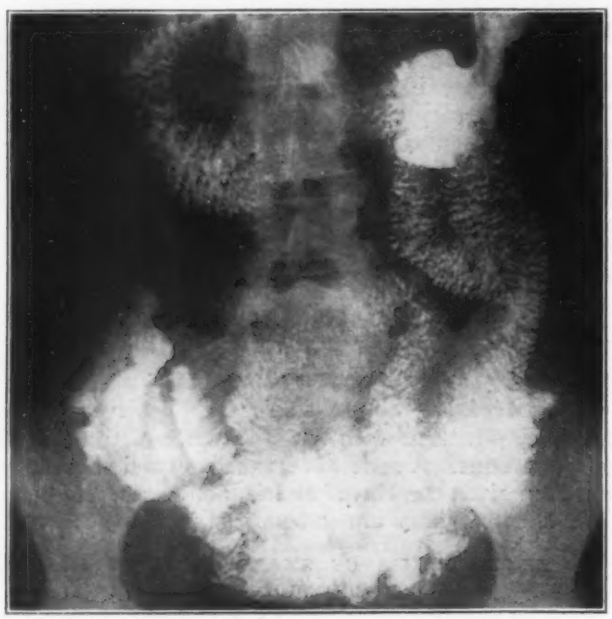

Fig. 1.—The normal small intestine. The barium shadow is even in width except where a contraction happens to be taking place. The peristaltic constrictions are usually short, and the wall behind them relaxes promptly. The jejunal shadow averages a little wider than that of the ileum. The mucosal folds in the jejunum are relatively high, giving it the characteristic feathery appearance. The folds are regular in width, spacing and height; they are usually 1 to 2 mm. wide and lie 1 to 3 mm. apart. Farther down in the intestine the folds become lower and farther apart but are no wider. The iliac margins often appear smooth, but low mucosal folds can usually be demonstrated by pressure films.

The rate of transit of the saline solution-barium sulfate meal is from one to five hours, the average being from two to four hours. Eating is normally followed by increased motility of the small intestine.

size to more than twice normal width. Dilated loops are characteristically seen in the well advanced stages, usually called nontropical sprue and adult celiac disease.

5. *Abnormal Segmentation.*—Areas of spasm of variable length narrow the lumen in places, sometimes completely expelling the opaque material from the contracted area and giving the appearance of discrete masses. In the advanced stages, e. g. in nontropical sprue, these filled segments are usually wider than the normal lumen and are usually associated with hypomotility. In the earlier stages the masses of barium sulfate are shorter and may be the width of the normal lumen but are often narrower; this appearance may be called hypertonic segmentation. The masses of opaque material, whether large or small, may be well rounded but are often fusiform. Fluoroscopic examination reveals considerable, if not continuous, activity and a quick movement of the areas of contraction back and forth, with little forward progression of the barium sulfate. Pressure on a distended quiescent segment may result in an immediate contraction and a shifting of the opaque material. Segmentation is usually more pronounced in the middle third of the intestine and in the less advanced stages, and in patients responding to treatment it may be present only in this region.

6. *Scattering Effect.*—In some cases, as the main masses of barium sulfate pass along, small irregular masses linger behind and give small shadows of irregular size and shape. These shadows may remain for some time scattered along the course of the intestine, usually in the upper loops. This effect seems to be due in part to a disturbance in the function of the circular muscle and in part to a disturbance in the movement of the mucosa which depends on the muscularis mucosae. The shadows are irregular in size and contour because of the irregularity of the mucosal contours. A fine, regular scattering of barium sulfate in the normal mucosal folds of the jejunum is occasionally seen, particularly if the stomach empties slowly, and is not easily confused with the irregular shadows characteristic of this phenomenon.

7. *Gas and Fluid Levels.*—In many cases gas is present in considerable amounts, which is interpreted by Pendergrass [8] as a manifestation of a disturbance in the ability of the mucosa to absorb gas. In more advanced stages gas and fluid levels on plain abdominal roentgenograms may suggest the possibility of ileus (Kantor [9]).

MUCOUS MEMBRANE

1. The mucosal folds may be greatly reduced in number or, in the well advanced stages, may be completely obliterated, giving the wall a perfectly smooth appearance. This phenomenon is best seen in the jejunum and cannot be demonstrated in the lower part of the ileum. With appropriate treatment the mucosal folds reappear.

2. The mucosal folds may be "exaggerated," that is, abnormally wide and irregular in width, height and spacing. In the earlier stages they sometimes appear as low, rounded indentations in the margin of the barium shadow. Exaggeration may be present in the middle loops, while those higher up may appear normal. At necropsy in 1 case exaggeration of the mucosal folds was associated with atrophy of the mucosa.[7]

DELAYED APPEARANCE OF ABNORMAL PHENOMENA

In occasional instances the mucosal folds of the jejunum may appear normal on the first two or three films, and then the irregular arrangement appears. Similarly, the appearance of segmentation may be delayed; this has been noticed in a typical case of sprue after improvement under treatment.

EFFECT OF TREATMENT

Except in cases of the most advanced, severe vitamin deficiency appropriate treatment is followed by improvement in the function of the small intestine, as manifested by roentgen examination. In the more advanced stages mucosal folds reappear on previously

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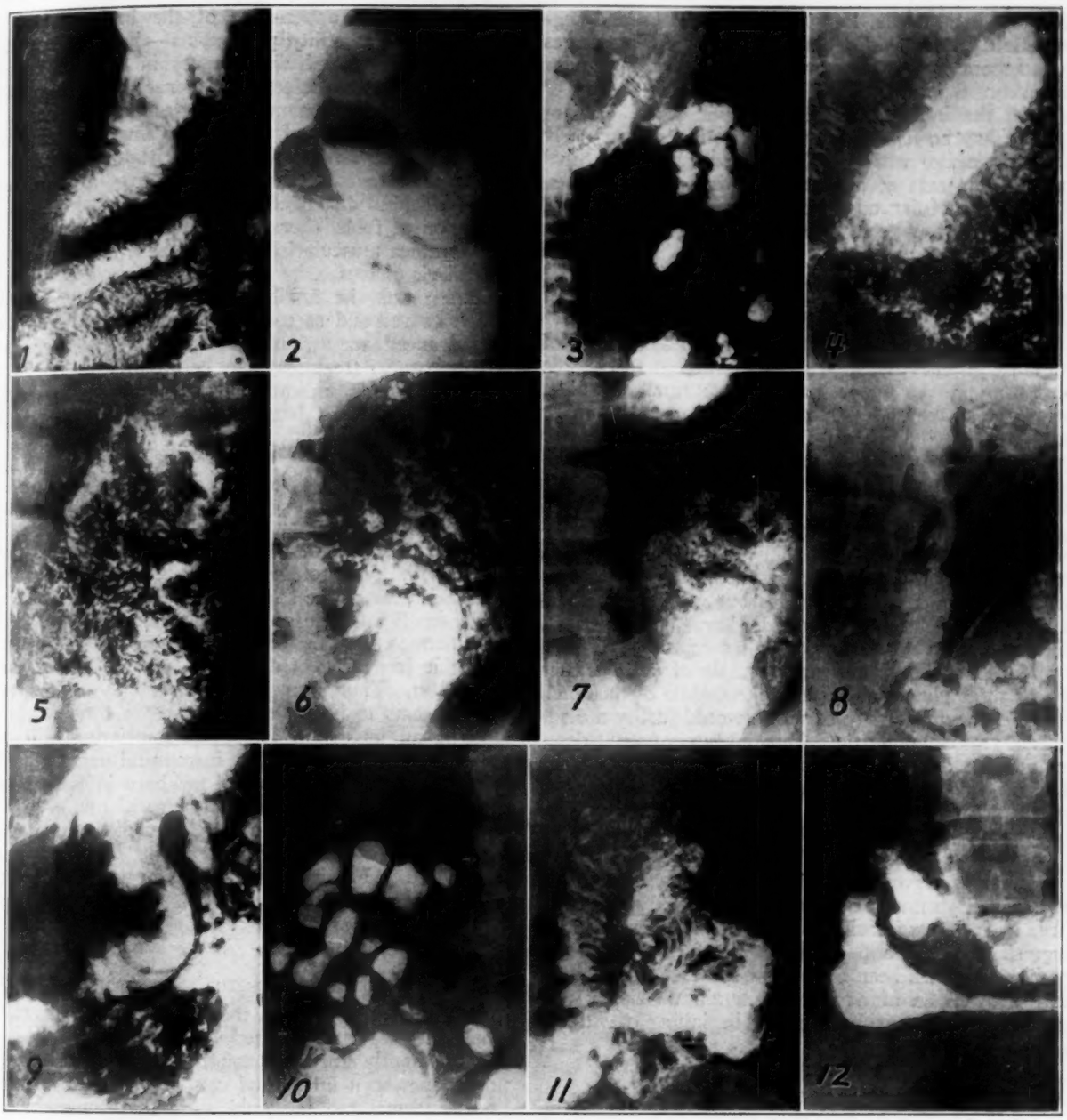

Fig. 2.—Abnormal small intestinal loops associated with vitamin B deficiency. It is impossible to reproduce with one roentgenogram the impression given by an entire "small intestine study." Selected loops are used to illustrate some of the appearances described in the text. Interpretation of the separate roentgenograms:

1. Normal jejunal loops, showing a normal contraction, in which the mucosal folds run parallel with the long axis of the intestine. The contraction is short, and the lumen on each side of it is normal in caliber.

2. Obliteration of the mucosal folds of the jejunum with dilatation and with gas and fluid levels in so-called nontropical sprue.

3. Segmentation in the upper part of the jejunum, reduction in the number and coarsening of the folds and hypertonicity of some loops. The subject, a Negress aged 39, complained of nausea and abdominal distress for one year. Administration of the vitamin B complex by mouth was followed by only slight improvement. Complete relief occurred about two weeks after the beginning of intramuscular injections of liver extract.

4. The "scattering effect," with a dilated segment of jejunum. The patient, a girl, had celiac disease as an infant and died at the age of 21 years of malnutrition, after a month of intractable diarrhea. At necropsy exaggeration of the mucosal folds of the jejunum, atrophy of the mucosa and submucosal edema were observed.

5. Decided hypertonicity of jejunal loops, with the "scattering effect." The patient, a Puerto Rican youth aged 19, had diarrhea for seven years, with mild atrophy of the tongue.

6. Pronounced hypertonicity and irregularity of caliber and of the mucosal folds of the jejunum. The patient, a woman aged 35, was put on a strict diet for duodenal ulcer. A year later she began to have pain in the lower part of the abdomen and diarrhea.

7. Intestine of the same patient three months after a high vitamin diet was instituted. The jejunal pattern is much improved. One hour after this roentgenogram was taken, however, the jejunum showed moderate segmentation and irregularity of the mucosal folds, the "delayed reaction" mentioned in the text.

8. Coarsening and irregularity of the mucosal folds, with irregularity in the caliber of a loop of jejunum running parallel with the spine. The patient, a surgeon in the late forties, had cramping abdominal pain at frequent intervals for two years, with moderate loss of weight. A large six hour gastric residue was found, without ulcer or other evidence of pyloric obstruction. The symptoms disappeared promptly after the administration of liver extract by mouth.

9. Irregularity in caliber and in the mucosal pattern in the upper jejunal loops in a case of mild sprue and anemia.

10. Segmentation in the proximal part of the ileum at three and one-half hours. The patient, a hospital secretary aged 31, complained of fatigue, cramps in the lower part of the abdomen and distention for several months. Administration of the vitamin B complex by mouth was followed by prompt disappearance of the symptoms and improvement in energy and endurance.

11. Irregularity in the mucosal pattern of a jejunal loop, a residual abnormality after the patient had improved with vitamin B therapy. Later the loops apparently became normal. The patient, a woman aged 29, was admitted because of periumbilical and epigastric pain, with a loss of 20 pounds (9.1 Kg.) in three months.

12. Irregularity in caliber and partial obliteration of the mucosal folds of a loop of the proximal part of the jejunum of the same patient. Although the patient became symptom free, this loop has remained persistently abnormal after two years.

smooth jejunal walls, hypotonicity decreases and segmentation gradually diminishes. In the earlier stages the exaggerated, irregular mucosal folds become regular and even. Segmentation disappears first in the upper third of the intestine and later lower down. Hypomotility may be followed by hypermotility, particularly of the jejunum, with a subsequent return to normal limits in the rate of movement of intestinal contents. In the cases of far advanced deficiency states I have been able to follow, complete restoration of the intestine to normal has not occurred.

LOCALIZATION OF MOST MARKED AND PERSISTENT CHANGES IN THE MIDDLE THIRD

Segmentation, even in the well advanced stages of vitamin deficiency, is often more marked in the middle third than in the upper loops of the small intestine. Improvement under treatment is first seen in the upper loops of the jejunum and develops more slowly lower down. The upper third may apparently return completely to normal while a portion of the middle third remains abnormal. In the cases of early, mild vitamin deficiency—mild as far as intestinal manifestations go—segmentation may be found only in the middle third. In some cases the patient may recover completely as far as symptoms are concerned, but persistent abnormalities may remain in the middle loops. One patient, followed for three years, although symptom free on a normal diet without an excessive intake of vitamins, has two or three abnormal loops in the middle of the small intestine, the appearance of which would justify a diagnosis of regional enteritis. Apparently permanent damage may be done to the small intestine even in cases of vitamin deficiency not severe enough to produce the typical picture of one of the recognized clinical entities.

DISTURBANCE IN GASTRIC PHYSIOLOGY

Slow emptying of the stomach is frequently found in well marked primary deficiency states. A good sized six hour residue of barium sulfate may be present, with sluggish, ineffective peristalsis and often with antral spasm. This has been present in some of my cases of early as well as of advanced vitamin deficiency and has disappeared quickly after the beginning of vitamin therapy.

PATHOLOGY

Information concerning the pathologic changes in the small intestine in deficiency states unfortunately is scanty and somewhat contradictory for the advanced stages and is not available concerning the earlier stages. In both experimental animals and in human beings the changes are variable. In fatal cases, atrophy of the tunica muscularis and of the mucosa, edema, round cell infiltration and fibrosis of the submucosa and ulceration have been described. A biopsy specimen from the smooth jejunum of a patient with typical nontropical sprue, taken when the patient was improving under treatment, disclosed degenerative changes in the fibers of the tunica muscularis and muscularis mucosae and degeneration of nerve cells in both the myenteric and the submucosal plexuses.[7]

MECHANISM OF ABNORMALITIES OF THE SMALL INTESTINE

The propulsion of intestinal contents is a function of the longitudinal and circular coats of the tunica muscularis. The contraction of the circular muscle, manifested by narrowing of the lumen, is accompanied by a contraction of the longitudinal muscle which cannot be detected by the appearance of the barium shadow. The abnormal motility phenomena—the segmentation, changes in tone and disturbances in time of transit—must be due to defective response of these muscle coats to the normal stimulus of intestinal contents.

The mucosal folds of the normal small intestine are able to change direction within peristaltic contractions and may be temporarily obliterated over a short segment which is distended with opaque material. The formation of folds, therefore, seems to be independent of the tunica muscularis and must be a function of the muscularis mucosae.[10] Abnormalities in the mucosal contours must be attributed to the inability of this muscle to respond as usual to normal stimuli. In the far advanced stages, in which the jejunal walls are smooth, proper treatment may be followed by reappearance of the folds, indicating a return of function of the muscularis mucosae, but the folds may not be normal in height or spacing.

NONSPECIFICITY OF INTESTINAL DISTURBANCES

The changes described in the roentgen appearance of the small intestine occur in conditions other than vitamin deficiency, the most important being diseases associated with hypoproteinemia (e. g. nephrosis[11]) and with disorders of the liver.[12] The roentgen appearance of the small intestine of dogs with experimental hypoproteinemia (Barden and co-workers[13]) is indistinguishable from that of dogs with vitamin B deficiency (Heublein, Thompson and Scully[14]). Submucosal edema seems to be present in all these conditions and may be an important factor by interfering with the nutrition and function of the intramural nerve cells.

The intestine of the normal newborn infant shows a typical "deficiency pattern"—absence of mucosal folds, segmentation, variability in the caliber of the lumen and hypomotility—which disappears during the first four or five months. Persistent segmentation was noted in the intestine of a normal rat when the animal was enraged; at another observation, when the rat was calm, the intestine appeared normal.[7]

A POSSIBLE COMMON MECHANISM

As similar disorders of the motor phenomena of the small intestine are associated with a number of different and apparently unrelated condtions, are present in the normal newborn infant and can be produced by anger in the normal rat, it would seem that some common mechanism must be present through which these effects are produced. The nerve impulses which affect the tunica muscularis arise in or are routed through the myenteric plexuses and those affecting the muscularis mucosae and the epithelium through the submucosal ganglions. Damage to or interference with the function of this elaborate nervous system within the wall would hamper all the physiologic processes under its control.

10. Gray's Anatomy (ed. 23, Philadelphia, Lea & Febiger, 1936) on page 1163 states, referring to the jejunal folds, " . . . unlike the folds in the stomach, they are permanent, and are not obliterated when the intestine is distended." That this conception may be incorrect is suggested by the change in direction of the folds within a peristaltic constriction and by the obliteration of the folds in a short segment of barium-distended jejunum, which not infrequently can be seen on routine roentgenograms of the intestine.

11. Pendergrass, E. P.; Ravdin, I. S.; Johnston, C. G., and Hodes, P. J.: Studies of the Small Intestine: 2. The Effect of Foods and Various Pathologic States on the Gastric Emptying and the Small Intestine Pattern, Radiology **26:** 651-662 (June) 1936.

12. Gutziet and Kuhlbaum: Ueber die Darmmotilität beim Ikterus, München. med. Wchnschr. **81:** 1095-1098 (July 20) 1934.

13. Barden, R. P.; Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: The Influence of the Serum Protein on the Motility of the Small Intestine, Surg., Gynec. & Obst. **66:** 819-821 (May) 1938.

14. Heublein, G. W.; Thompson, W. D., Jr., and Scully, J. P.: The Effect of a Vitamin B Complex Deficiency on Gastric Emptying and Small Intestine Motility, Am. J. Roentgenol., to be published.

After a review of the evidence, which cannot be recapitulated in this paper, I [7] recently suggested the intramural nervous system as a possible, if not the most probable, medium through which these effects are produced. By this hypothesis the apparent vagaries of the muscular disturbances, such as the slowness of recovery, become explainable as variations in the degree and extent of interference with the function of the intramural nerves, or of actual damage to these nerve cells, and in the rate of their recovery under treatment.

CLINICAL CONSIDERATIONS

A discussion of the greatly varied clinical manifestations associated with deficiency states cannot be undertaken here. Ample evidence has been presented in the literature that patients with well defined deficiency states give a history of disturbances of the digestive tract for some time before the characteristic clinical evidences of the disorder appear. Many of my patients with relatively moderate or mild disturbances of the intestinal picture have had obscure abdominal symptoms, often pain, unexplained by recognizable disease; such patients are usually thought to have a neurosis.[15]

It must be borne in mind (1) that a deficiency state often exists with other organic disease, (2) that the demonstration of a "deficiency pattern" does not rule out other organic disease, (3) that the symptoms of a deficiency state may be obscured by those of the primary organic disease, e. g. peptic ulcer, and (4) that the symptoms of a deficiency state may be the only manifestations of the underlying organic disease, e. g. diffuse lymphosarcoma of the intestine.

A vitamin deficiency may exist without disturbance of the small intestine. In cases of pernicious anemia, which is due to a lack of the specific antianemic factor, the small intestine appears normal on the roentgenogram. There may be similar situations at present unrecognized. The specific factor or factors in the vitamin B complex concerned with the physiology of the small intestine have not been identified with certainty. It seems possible that the lack of any factor concerned with the normal function of nervous tissue might play a part in inducing intestinal disorder; because of interference with absorption something in the nature of a vicious circle may thus be set up, which can be interrupted only by the parenteral administration of vitamins. From the clinical standpoint, it seems to be agreed that the whole vitamin B complex is necessary to relieve the abdominal symptoms.

DIFFERENTIAL DIAGNOSIS

The differentiation of the various fundamental causes of abnormalities of the small intestine is impossible at present; for example, one cannot say whether a lack of vitamins, hypoproteinemia or disease of the liver is primarily responsible. Aside from the possibility that the intramural nervous system may be the medium through which the effects are produced, the underlying mechanism has not yet been elucidated; it is not clear, for instance, how disease of the liver might be related to disturbance of or damage to the intramural nerve cells. For this reason the demonstration of the described changes in the small intestine on roentgen examination can be taken only as suggesting certain possibilities. In my cases the most common cause appears to be a vitamin B deficiency in one form or another, if clinical relief with the parenteral or the oral administration of liver extract or the vitamin B complex may be accepted as evidence.

Little is known about the effect of allergic reactions on the roentgen appearance of the small intestine. They are likely to be manifested only when the allergen is actually present in the digestive tract and are therefore unlikely to appear when a barium sulfate-saline solution preparation is given after a twelve hour fast. Dr. Robert A. Cooke recently showed me roentgenograms of a patient allergic to milk who was given barium sulfate with milk; the result was marked segmentation of the middle loops of the small intestine. In another case of chronic diarrhea the ileum, with a water-barium sulfate meal, was found to be hypertonic and without segmentation, and the trouble was later found to be allergy to milk. In the series of cases on which these observations are based the problem of differential diagnosis of allergy has rarely come up. However, it is possible that under certain circumstances the less marked forms of the "deficiency pattern" might be due to allergy, in which case no differentiation could be based on the appearance of the barium shadows.

COMMENT

In my experience the more advanced intestinal changes previously described can be taken as strong evidence of a nutritional disturbance, usually one in which vitamin deficiency plays a part but which might be due to hepatic disease or primarily to hypoproteinemia. The milder changes, however, such as moderate segmentation limited to the middle third, without associated disturbance in the mucosal pattern, must be taken as merely suggestive of the possibility of a mild nutritional disturbance. In 1 instance I have seen such mild changes evolve into severe changes in spite of the administration of preparations of the vitamin B complex by mouth, only to regress rapidly toward the normal after the institution of parenteral vitamin therapy, and at the same time stubborn abdominal pain of years' duration disappeared. In another instance, moderate changes on roentgen examination of the small intestine for slight bleeding in the digestive tract led to the suggestion of possible hypoproteinemia, among other things; a high serum globulin content with a low serum albumin content was interpreted by the chemist as suggesting multiple myeloma, which was proved by sternal puncture.

In spite of the nonspecificity of these intestinal disturbances, they are proving helpful in the search for the cause and relief of obscure abdominal symptoms.

SUMMARY

Nutritional disorders are often associated with disturbances in the roentgen appearance of the small intestine, particularly in cases of vitamin B deficiency. The nutritional disorder may be primarily due to lack of vitamins or may be secondary to other visceral disease. The intestinal phenomena are nonspecific and may be due to or associated with a number of different conditions. It seems probable that interference with or damage to the intramural nervous system is the common mechanism by which the intestine is affected. In spite of this nonspecificity the demonstration of these changes may be in many cases the first suggestion that a vitamin deficiency may play a primary or a secondary part in the patient's condition. It is worthy of emphasis that knowledge of the physiology of the small intestine is at present incomplete.

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15. These patients are discussed in some detail by Drs. Lepore and Golden in this issue of THE JOURNAL, p. 918.

A SYNDROME DUE TO DEFICIENCY OF THE VITAMIN B COMPLEX

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Progress in the recognition of vitamin B deficiency states in human beings has been hampered by the lack of simple and reliable laboratory tests. As a result, clinicians have resorted to the therapeutic trial as their main aid in the diagnosis of these deficiencies. Many worthwhile advances have been made in this way, but, because of uncontrolled variables, many errors have also been made. The "Give-a-dose, if-the-patient-feels-better-he-has-a-deficiency" school of research workers has aroused a storm of criticism, causing conservative clinicians to be extremely skeptical of their reported results. To the discerning and critical clinician it has become apparent that, in the absence of specific tests for deficiency of the various components of the vitamin B complex, reliance must be placed on other types of objective criteria and not merely on the patient's increased sense of well being. It is with this point in mind that we present this report based on the findings in a group of 30 patients seen in the Vanderbilt Clinic and the Presbyterian Hospital in New York.

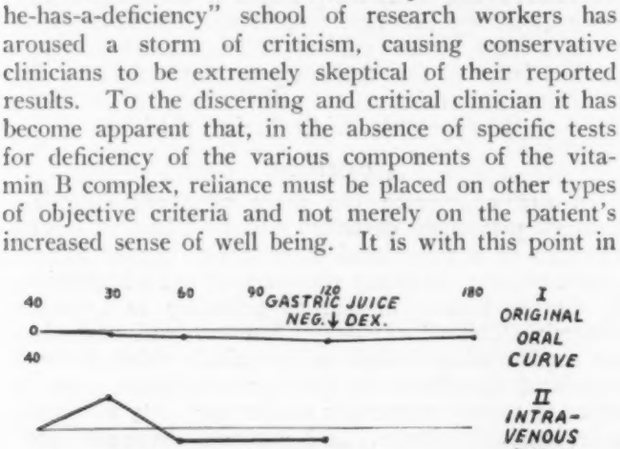
GASTRIC JUICE NEG. ↓ DEX.
I ORIGINAL ORAL CURVE
II INTRA-VENOUS CURVE
III ORAL CURVE AFTER VIT. B THERAPY
IV RELAPSE WITHOUT VIT. B
V EFFECT OF DIET C-150 P-70 F-200
VI RELAPSE
VII DUODENAL DEXTROSE
CHANGE IN BLOOD SUGAR
MINUTES AFTER DEXTROSE

Fig. 1.—Dextrose tolerance curves of patient S. G. at various stages in the clinical course.

Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

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Advice and encouragement were given the authors by Dr. Walter W. Palmer. Miss Margaret Reid extended able assistance in performing the many dextrose tolerance tests, and Mrs. Rhoda Bower made the chemical studies. The Abbott Laboratories gave generously of the vitamin B products used.

The picture presented by these patients is that of a definite clinical entity which is not classic pellagra, ariboflavinosis, beriberi or sprue. The important features of the syndrome are listed in the accompanying table.

Certain facts listed in the table demand further comment.

INADEQUATE DIET

The causes for the inadequate dietaries are many and varied. Since carbohydrate is the cheapest source of energy, economic factors often dictate its role in the diet. As a matter of fact, in only 20 per cent of the cases was poverty the primary cause for the inadequate diet, other factors being of much greater importance. Psychogenic causes accounted for a number of deficient diets. Faddism was responsible for several others, for the group included two vegetarians as well as a number of persons who had an excessive craving for sweets. Therapeutic diets prescribed by physicians were responsible for a significant number of cases. These diets included low fat diets for gallbladder disease, reducing diets, modified ulcer diets, and low residue and elimination diets. Voluntary dietary restrictions because of sitophobia of varying degree accounted for several abnormal diets and played a partial role in many others. Laziness was a factor, especially among white collar workers who disliked cooking and tried to manage with sandwiches, fewer meals and foods requiring less cooking.

Features of the Syndrome

History	Objective Findings
1. Inadequate diet, high in carbohydrate, poor in vitamin B complex, fat and protein	1. Flat oral dextrose tolerance curve
2. Weight loss	2. Abnormal small intestine roentgen ray appearance
3. Asthenia	3. Malnutrition
4. Anorexia	4. Hypochlorhydria or achlorhydria
5. Irritability and personality changes	5. Increased capillary fragility
6. Weakness and faintness two to four hours after meals	6. Absence of steatorrhea, glossitis, dermatitis or anemia of significant degree
7. Gastrointestinal complaints: (*a*) Flatulence (*b*) Pain (*c*) Diarrhea in 25% of cases (*d*) Constipation	7. Eighty per cent of patients are women

The net result of these various factors was that the patients lived on diets high in carbohydrate and poor in vitamin B complex, protein and fat, and often deficient in calories. It is recognized that a high carbohydrate, fat poor diet increases the need for vitamin B_1 and probably for the other members of the vitamin B complex. With the diet already deficient in vitamin B this composition favors the development of vitamin B deficiency states.

WEIGHT LOSS

The incidence of weight loss in this series is high, but the amount has seldom been great. Many of these patients have always been thin and underweight. Several patients were actually obese and had suffered no weight loss.

ASTHENIA; ANOREXIA

Asthenia is a prominent symptom and has often been incapacitating, most of the patients complaining of lack of "pep" and inability to do a day's work without feeling exhausted.

Anorexia has been another important symptom favoring the perpetuation of the vicious cycle started by the inadequate diet.

IRRITABILITY AND PERSONALITY CHANGES

Personality changes have often been marked. One young woman assured us that if she had not been cured by therapy she would almost certainly have had to break up her home, because she was so cranky that she was not "fit to live with."

WEAKNESS AND FAINTNESS

Weakness and faintness coming on from two to four hours after meals are interesting symptoms, for they probably are referable to slight hypoglycemia.

GASTROINTESTINAL COMPLAINTS

The frequently encountered gastrointestinal symptoms appear vague until examined in the light of the roentgen ray appearance of the stomach and small intestine, which are to be discussed further. The most common complaint is of gaseous, generalized abdominal distention following meals. This often causes the patient to stop eating after the ingestion of only a small portion of his meal. "Gas pains" passing along the course of the small intestine are described by many of the patients. Borborygmi are reported by almost all. Distress and pain are often localized to one abdominal quadrant. The left upper quadrant is a frequent site. The periumbilical region is a favorite. Occasionally the right lower quadrant has been involved. Food often aggravates these complaints, and soda may also aggravate them. Diarrhea occurs in one fourth of the patients in the group, but constipation is a more common complaint. One patient said he felt as though he had swallowed a pack of cigarets. Incidentally, it is worth noting that several patients had found that a mild cathartic, such as magnesia magma or cascara in small doses, would often produce diarrhea lasting several days. Several others noted exacerbation of symptoms after a really small amount of alcohol. As can be seen, the picture is that of a highly irritable gastrointestinal tract which responds at times rather violently to even mild irritants.

A history of sore tongue or burning of the mouth is only occasionally obtained.

It should be stressed that these persons are ambulatory. Many are working and many have been classed as neurotics and cranks by their associates. A number are nurses and physicians who have eliminated the possibility of organic disorders to their own satisfaction and are ashamed to report their symptoms for fear that they will be called neurotic. They manage to struggle along, feeling under par, like an eight cylinder motor hitting on four. These patients are often the bane of the existence of the physician who sees them, for the usual examination reveals nothing to account for their many symptoms. The surgeon is frequently confronted with these individuals, especially when they complain of abdominal pain, and useless operations including appendectomy and cholecystectomy have been done on several members of the group.

The history presented by these patients is, as can be seen from the preceding, not of itself typical of any one disorder. Similar symptoms are seen in a variety of diseases. Consequently, reliance must be placed on the association of these symptoms with certain objective criteria. These criteria have been enumerated in the table and merit further discussion.

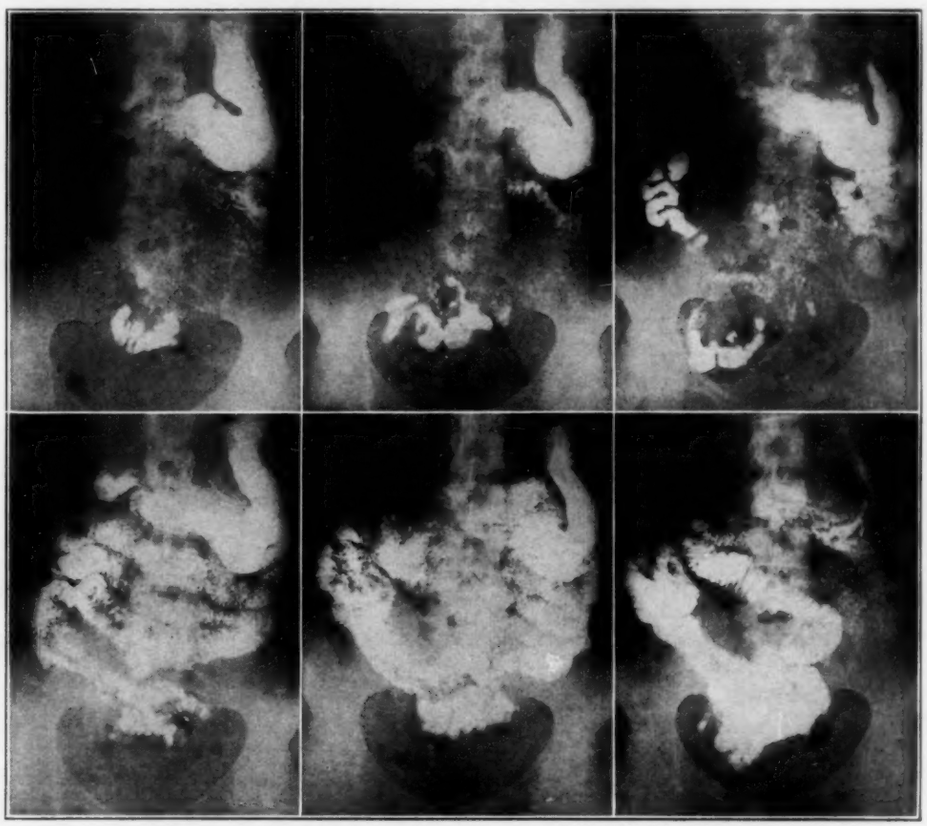

Fig. 2.—Mild deficiency state with satisfactory response to oral vitamin B complex therapy: A 40 year old woman complained of epigastric distress and belching for several years without diarrhea or loss of weight. The case had been diagnosed as gastric neurosis. The sugar tolerance curve was flat. Gastric analysis revealed normal acidity. Study of the small intestine on Jan. 8, 1941 (top row one, one and one half and two and one half hours) showed hypermotility of the jejunum, uneven caliber and uneven mucosal folds with segmentation in the proximal ileum. She was given large doses of vitamin B complex by mouth with prompt relief of symptoms and gain in weight. The dextrose tolerance curve became normal. Reexamination of the small intestine on March 27 (lower row, one, one and one half and two and one half hours) showed no abnormalities in the appearance of the jejunum with no definite evidence of segmentation.

DEXTROSE TOLERANCE

The flat oral dextrose tolerance curve is found in 28 of the 30 patients. The technic used has been described,[1] and the dose of dextrose has been 1 Gm. per kilogram of body weight. This is the dose recommended by Peters and Van Slyke[2] for testing carbohydrate tolerance. In no instance was vomiting induced by it. The dextrose tolerance curve has been designated as "flat or low" if the blood sugar level has not risen at least 40 mg. per hundred cubic centimeters above

1. Lepore, M. J.: The Clinical Significance of the Low or "Flat" Oral Glucose Tolerance Curve, Ann. Int. Med. **14**: 2008-2014 (May) 1941.
2. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1931, vol. 1, p. 117.

the fasting level during the two to three hour period following the ingestion of dextrose. The average curve in this group of patients exhibits an increase of only 14 mg. per hundred cubic centimeters at thirty minutes after dextrose, 5 mg. per hundred cubic centimeters at one hour; a decrease of 0.8 mg. per hundred cubic centimeters at two hours, and a decrease of 10 mg. per hundred cubic centimeters at three hours. Blood sugar values of 60 mg. per hundred cubic centimeters were frequently encountered during the course of the tests. On three occasions blood sugar levels of 40 to 45 mg. per hundred cubic centimeters were found.

The clinical significance of the flat oral dextrose tolerance curve has been discussed elsewhere.[1] For the present purpose, it appears that the following factors are concerned with this response:

1. High carbohydrate diet causing an acceleration in the blood sugar removal mechanism.
2. Slow absorption of dextrose from the gastrointestinal tract.
3. Combinations of the preceding.

As has been stated, these patients are on high carbohydrate diets, which undoubtedly play a role in the causation of the flat curve. Groen's[3] direct measurements of dextrose absorption from the small intestine of adult human beings with vitamin B deficiencies have shown that absorption is retarded. May and McCreary[4] have reported a flat oral dextrose tolerance curve in children with celiac disease and a normal dextrose tolerance curve in most cases when the dextrose was introduced directly into the duodenum. They claim that in this condition the flat curve is due to mechanical factors such as gastric retention. This hypothesis does not appear to hold for the adults included in this syndrome, for in the first place, the 100 per cent three hour gastric retention mentioned by May and McCreary never occurred in this group. Furthermore, it is now known that dextrose is absorbed by the stomach when introduced in the concentrations (20 to 40 per cent) used in this study.[5] A moderate degree of antral spasm was often found, but not sufficient to cause much retention. The patient who had the most severe gastric retention and antral spasm proved to be one of the two persons with a normal oral dextrose tolerance curve. We are studying this subject, utilizing duodenal instillation of dextrose. The data obtained so far are insufficient to justify a definite conclusion.

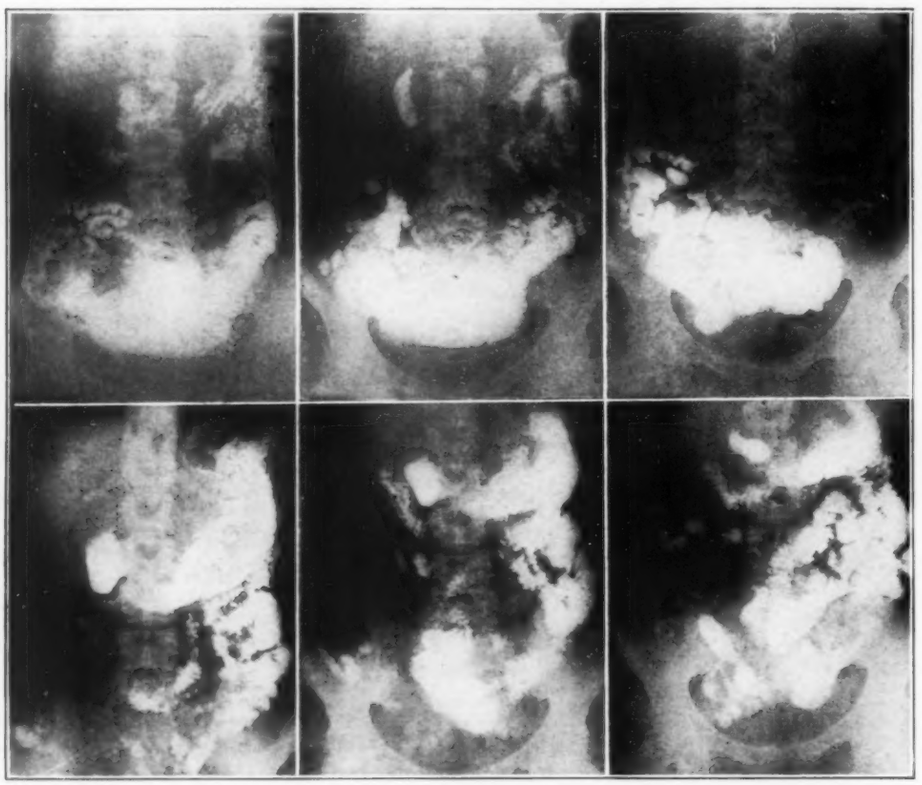

Fig. 3.—Deficiency state with achlorhydria with poor response to oral vitamin B complex but with excellent response to parenteral liver extract: A 39 year old mulatto woman, Feb. 1, 1938, complained of nausea, epigastric distress, weight loss and mild stomatitis. Roentgen examination of the stomach on March 1 showed nothing abnormal. A diagnosis of gastric neurosis was made. A high vitamin and high caloric diet was followed by a persistence of symptoms. In October 1940 she complained of sore gums. The dextrose tolerance curve on Oct. 9, 1940 was slightly flat. Small intestine study on October 11 (top row, one half, one and one and one half hours) showed delayed appearance of an irregular mucosal pattern and irregular caliber of the lumen of the jejunum with moderate segmentation in the upper ileum. Vitamin B complex syrup by mouth was followed by an apparent increase in symptoms. The dextrose tolerance curve on December 27 was still lower. Small intestine study on Jan. 9, 1941 (lower row) showed a definite increase in the intestinal abnormalities, particularly in the segmentation in the proximal ileum (Continued in figure 4.)

The influence of various factors on the dextrose tolerance curve is depicted in figure 1, consisting of dextrose tolerance curves done on the same patient at different times and under the conditions outlined. The first curve is that initially encountered when the patient exhibited the classic features of the syndrome presented in this report. Gastric juice, removed two hours after oral dextrose, was negative to Benedict's solution, indicating that no gastric retention of dextrose had occurred. The intravenous dextrose tolerance curve was normal. The patient was subsequently given adequate doses of thiamine hydrochloride, riboflavin and nicotinic acid with decided clinical improvement and a change in the dextrose tolerance curve to normal. However, since the patient simultaneously modified her diet, it is difficult to tell which factor caused the change. Subsequently the patient stopped vitamin B medication and ate her usual diet. The dextrose tolerance curve again became flat. She was then placed on a diet consisting of carbohydrate 150 Gm., protein 70 Gm., and fat 200 Gm., and after two weeks the dextrose tolerance test had reverted toward the normal. About one year later, despite her excellent clinical status, the oral dextrose tolerance curve was again flat. The patient had not taken vita-

3. Groen, Juda: Absorption of Glucose from the Small Intestine in Deficiency Disease, New England J. Med. **218:** 247-253 (Feb. 10) 1938.

4. May, C. D., and McCreary, J. F.: The Glucose Tolerance Test in Celiac Disease: Significance of Low Blood Sugar Curves, J. Pediat. **17:** 143-154 (Aug.) 1940.

5. Warren, Richard; Karr, W. G.; Hoffman, Olive D., and Abbott, W. O.: Intubation Studies of Human Small Intestine: Absorption and Expulsion of Glucose from Stomach, Am. J. M. Sc. **200:** 639-648 (Nov.) 1940.

min B supplements for many months. A dextrose tolerance test done at this time after the introduction of dextrose directly into the duodenum under fluoroscopic control revealed a flat curve.

It appears, therefore, from these studies that the flat oral dextrose tolerance curve exhibited by these patients is due to the combination of vitamin B complex deficiency and the high carbohydrate diet.

ROENTGEN CHANGES IN THE SMALL INTESTINE

The disturbances in the small intestine associated with vitamin B deficiencies and demonstrable by roentgen ray methods have been discussed by one of us (R. G.) elsewhere in this symposium and the details will not be repeated here. They seem to vary roughly with the severity and the duration of the deficiency. In brief, they consist of derangement of motility and of mucosal pattern. In the more advanced cases a slow rate of transit of the opaque material, hypotonicity, segmentation and coarsening or even obliteration of the mucosal folds, as originally described by Snell and Camp,[6] may be found. The mucosal changes are most evident in the upper third and the segmentation in the middle third of the small intestine. With appropriate treatment the mucosal pattern in the upper jejunum returns to normal first and the segmentation diminishes but may persist in the middle third long after the patient is clinically normal. Hypomotility may be replaced by hypermotility, particularly in the jejunum. In the earlier cases the only abnormality may be segmentation in the middle third.

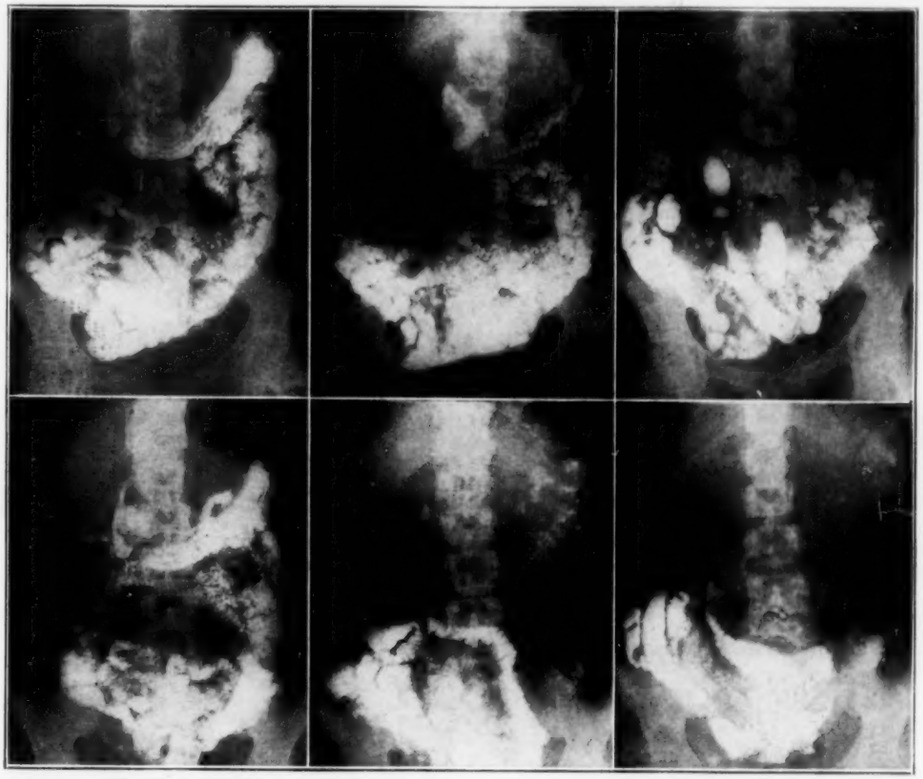

Fig. 4 (continuation of figure 3).—Vitamin B complex was discontinued on Jan. 16, 1941. On January 30 she had a sore tongue and tender gums. On February 13 she complained of increased pain and diarrhea, and oral vitamin B complex was resumed with slight improvement in the tongue. Small intestine study on March 3 (third row) showed a definite increase in the segmentation in the middle loops. Liver extract injections were begun on April 1. Two weeks later she felt much better for the first time. Small intestine study on April 28 (fourth row) showed marked improvement in the small intestine pattern.

Information concerning the changes to be expected in the early, less well defined cases has been obtained in two ways: (1) by the repeated examination of the small intestine of well defined cases as improvement under treatment took place and (2) more recently by correlation of roentgen ray findings with clinical studies in the group of cases reported herewith.

These changes in the small intestine are not in themselves specific for vitamin deficiency. They may be present in other conditions,[7] particularly those associated with hypoproteinemia and disorders of the liver and as a result of emotional disturbances and possibly of intestinal allergy. Because of the nonspecific nature of these manifestations, it is obvious that the causative factors can be determined only by further clinical study. However, from the clinical standpoint the suggestions based on the roentgen findings have proved valuable. In approximately half of the cases reported herewith the possibility of a deficiency was first suggested by roentgen examination of the small intestine.

In view of the nonspecific character of the small intestine roentgen ray changes, a question might be raised as to whether in some individuals a disturbance in the autonomic nervous system is primarily responsible for the changes in the small intestine, leading to impaired absorption and dietary restriction. The vitamin B deficiency state would then follow and merely perpetuate a vicious cycle. In other words, a constitutional factor may have initiated this syndrome. Evidence has been presented elsewhere[7] suggesting that disturbance in the nervous system supplying the intestinal wall is probably the common factor in these small intestine changes. If this is true, it is obvious that a disturbance in the autonomic nervous system may be either primary, hampering absorption, or may be secondary to a vitamin B deficiency which interferes with nerve function. Unfortunately, the therapy of functional disorders of the autonomic nervous system is unsatisfactory, and this factor can be only partially controlled. Many of the patients in this group had received sedation, psychotherapy and antispasmodic therapy and had become worse under this regimen. The use of whole vitamin B complex, on the other hand, was followed by clinical and objective improvement. The patient who had improved with vitamin B and liver therapy became worse when this was discontinued for ten months and sedation and psychotherapy substituted. She improved again with vitamin B complex therapy. Another patient who exhibited all of the features of the syndrome except

6. Snell, A. M., and Camp, J. D.: Chronic Idiopathic Steatorrhea, Arch. Int. Med. **53**: 615-629 (April) 1934.

7. Golden, Ross: Abnormalities of the Small Intestine in Nutritional Disturbances: Some Observations on Their Physiologic Basis (Carman Lecture), Radiology **36**: 262-286 (March) 1941.

the abnormal small intestine pattern was given no treatment except a high caloric diet and sedation for six to eight months. At the end of this period an abnormal small intestine pattern appeared for the first time. Even more pertinent was the course of a patient who was first seen in December 1938, when he exhibited the cardinal features of this syndrome. He was called away to a CCC camp in California before adequate therapy could be instituted and remained there for two years, having access to an excellent diet. On reexamination in May 1941, almost two and one-half years after his first visit, marked changes were still present in the small intestine roentgen ray pattern, only slight improvement having occurred.

Despite these facts, it is recognized that it is entirely possible that a primary disturbance in the autonomic nervous system control of the small bowel may be of importance in initiating this disorder in some patients. Perhaps this is one of the factors that ultimately determines whether a given patient will develop one or the other of the classic vitamin B deficiency states. Only by following large control groups of such patients can further light be cast on this aspect of the problem.

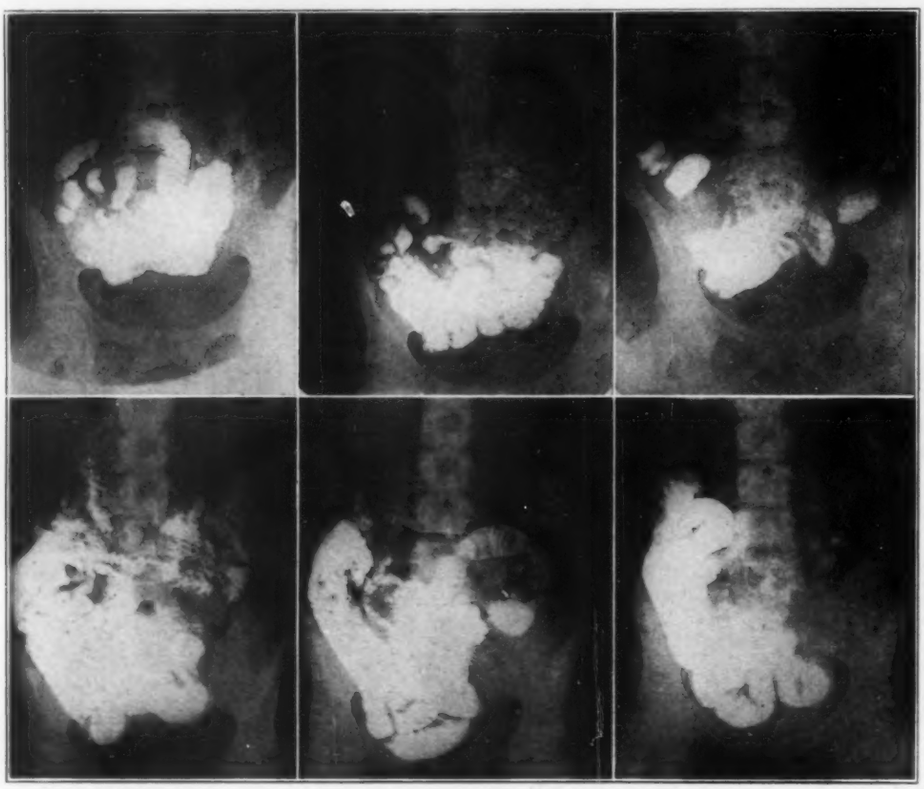

Fig. 5.—Deficiency state responding poorly to capsules of vitamin B complex but with excellent response to vitamin B complex syrup: A 30 year old woman had abdominal pain for three years, for which the gallbladder and appendix were removed elsewhere without relief. In June 1940 she had intermittent diarrhea with cramping pain. She was thought to have an anxiety state and a spastic colon. Small intestine study on October 24 (upper low) showed only moderate segmentation in the proximal ileum. She was given vitamin B capsules and a high carbohydrate, low residue diet by her local doctor. Small intestine study of March 20, 1941 showed possibly a little less segmentation in the proximal ileum. The sugar tolerance curve on March 21 was flat. Gastric analysis showed a slight hypoacidity. She was then given vitamin B complex syrup in good doses with striking improvement in her symptoms. Small intestine study on May 7 (lower row) showed only a little segmentation, although some irregularity and coarsening of the mucosal folds and slight segmentation persisted in the middle loops of the intestine.

GASTRIC ACIDITY

Of 13 patients whose gastric juice was analyzed after histamine injection, 3 exhibited achlorhydria, 6 hypochlorhydria and 4 normal acidity. This is a significant finding, for there is evidence indicating that vitamin B_1 is protected by the acidity of the gastric juice from destruction in the alkaline duodenal secretions.[8] If this protective factor is absent, vitamin B_1 deficiency is facilitated. Whether this holds for other components of the vitamin B complex is not known, but it is possible that it does. This point is of especial importance in evaluating the effects of oral therapy and may explain some of the failures and poor responses. In this connection it should be mentioned that individuals in this group have often used various antacids in ineffectual attempts to control their "indigestion." This medication may also have favored the development of the vitamin B deficiency state.[8] Several patients, who are not included in this series, had undergone gastroenterostomy for duodenal ulcer and had subsequently developed features of this syndrome. It is possible that, in addition to dietary factors, regurgitation of bile into the stomach with consequent destruction of vitamin B may have been involved in these cases.

CAPILLARY FRAGILITY

The significance of the increased capillary fragility demonstrated by the tourniquet test is not clear at present. Vitamin C deficiency is apparently responsible in a few cases, but not in the majority. The return to normal of the capillary fragility following vitamin B complex therapy suggests that there may be a factor in the B complex which is concerned with the maintenance of normal capillary fragility. However, the vitamin B complex may merely facilitate the absorption of a dietary factor concerned with capillary fragility. This problem is being studied at present.

STEATORRHEA

Steatorrhea has not been observed in this group of patients. However, this statement is based merely on the results of microscopic examination of the stools.

Chemical studies of fat absorption and excretion are definitely indicated.

RESPONSE TO THERAPY

The present discussion will be limited largely to those cases in which an oral vitamin B complex syrup derived from yeast [9] was administered. Twelve patients were given this material in doses varying from 1 teaspoon to 1 tablespoon three times daily after meals. The improvement in their clinical condition was striking and at times almost unbelievable. Appetite improved, tiredness disappeared, mental attitudes changed, weight increased, diarrhea, when present, disappeared, and the

8. Melnick, Daniel; Robinson, W. D., and Field, Henry, Jr.: Fate of Thiamine in the Digestive Secretions, J. Biol. Chem. **138**: 49-63 (March) 1941.

9. Vitamin B Complex Syrup-Abbott.

various abdominal aches improved. The time of appearance of signs of improvement varied considerably. Usually, clinical improvement became evident by the first week or two of therapy, but individuals differed in their response.

Clinical improvement often preceded improvement in the roentgen ray appearance of the small intestine, but in three to four weeks' time improvement in the small intestine was usually demonstrable. Decided improvement was usually evident after two to three months of oral therapy (fig. 2). Where the process was especially severe, after initial improvement, residual changes persisted in the small intestine despite therapy.

It is our impression that patients with achlorhydria have been more resistant to oral therapy than those with normal gastric acidity. In the light of the report of Melnick, Robinson and Field [8] on the destruction of vitamin B_1 by alkaline duodenal juices, this would seem quite logical. One patient with achlorhydria (fig. 3) responded practically not at all to oral vitamin B complex therapy and in fact actually became worse for a time but responded dramatically to the injection of crude liver extract. In this connection it should be noted that 2 patients had been taking vitamin B complex capsules for three to four months without benefit (fig. 4). When changed to the syrup, rapid clinical improvement ensued. It may well be that patients with this disorder have difficulty in digesting and absorbing encapsulated, highly concentrated preparations of vitamin B complex. The syrup is either better absorbed or richer in certain of the less known factors of the vitamin B complex.

The oral dextrose tolerance curve reverted toward normal in a number of cases. However, when a high carbohydrate diet was consistently adhered to the dextrose tolerance curve remained flat.

As previously stated, this syndrome is not classic sprue, pellagra, beriberi or ariboflavinosis. It is a distinct clinical entity and is of relatively common occurrence in this region. It is important that it be recognized in its early stages before irreversible changes have occurred in the small intestine. The association of a flat oral dextrose tolerance curve and the abnormal small intestine roentgen ray appearance suggests that this disorder is related to sprue. However, in the absence of the other features of classic sprue there is no justification for labeling it as such. It is interesting to speculate as to whether this disorder is the forerunner of sprue, but no conclusive data on this point are available.

If this syndrome is kept in mind when patients presenting these complaints are seen, and the proper studies are made, we are certain that many puzzling and stubborn problems will be solved.

SUMMARY

A nutritional deficiency syndrome of relatively frequent occurrence in this region has been studied. The main objective features of this syndrome are malnutrition, a flat oral dextrose tolerance curve and an abnormal small intestine roentgen ray pattern. The disorder responds to therapy with the whole vitamin B complex. Patients with achlorhydria or severe small intestine changes respond best to parenteral administration of vitamin B complex or crude liver extract.

TUMEFACTIVE LESIONS OF THE SMALL INTESTINE

C. ALLEN GOOD, M.D.
ROCHESTER, MINN.

For many years the results of roentgenologic examination of the small intestine were unsatisfactory. Recent experience, however, leads one to believe that the accuracy of this method is nearly comparable to that which obtains in the roentgenologic examination of the stomach and colon. With the aid of proctoscopy and peroral endoscopy, the entire length of the alimentary canal now may be explored with confidence for the presence of disease.

Although individual tumefactive lesions occur infrequently in the small intestine, in the aggregate they make up a fair proportion of all the pathologic conditions (excluding duodenal ulcer) encountered by the roentgenologist in this division of the gastrointestinal tract. These lesions include both neoplastic and nonneoplastic varieties.

Fig. 1.—Deformity produced by nonspecific chronic enteritis. The demarcation between involved and uninvolved portions of jejunum is gradual not sharp.

The granulomas or nonneoplastic tumefactions are due in most instances to chronic nonspecific enteritis or to tuberculosis. Granulomas caused by other inflammatory conditions such as actinomycosis, syphilis and lymphogranuloma venereum have been described but they are extremely rare.

The true neoplasms which arise in the small intestine are similar histologically to those which involve the stomach and colon. A variety of benign blastomas have been described including lipoma, fibroma, carcinoid, aberrant pancreatic tissue and angioma, but the most frequently encountered are leiomyoma and adenoma. Most important of the malignant neoplasms is adenocarcinoma; leiomyosarcoma, fibrosarcoma and lymphoblastoma also occur.

From the Section on Roentgenology, Mayo Clinic.
Read before the Section on Radiology, at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

Weber and Kirklin [1] have shown that the roentgenologic examination of the small intestine has not approached in the past the efficiency reached by similar methods applied to the stomach and colon. They found, however, that 86 per cent of a series of thirty-six neoplasms were located by this means and they expressed the belief that improvement will come with accumulating experience.

The primary function of the roentgenologist when examining the small intestine is to determine the presence or absence of a lesion and to ascertain its location. From the roentgenologic characteristics displayed, he then must attempt to give the lesion a histologic name. Such identification is not always possible, because of the location of the lesion, because of its size or because of accompanying secondary changes which obscure the primary condition.

Two methods for the examination of the small intestine are available, one with only limited usefulness. Examination of the terminal portion of the ileum, the site of the majority of the nonneoplastic tumefactions, may be accomplished at the time of the administration of a barium sulfate enema. Reflux of the opaque solution into the ileum occurs more frequently than not, and the filling of the terminal loops of small intestine in this way permits a satisfactory examination of this portion of the bowel. The remainder of the small intestine is examined best by means of the opaque meal. Frequent roentgenoscopic observations should be made in addition to the customary roentgenograms. This method as it is employed at the Mayo Clinic has been described elsewhere (Weber and Kirklin [2]).

Tumefactive lesions of the small intestine usually manifest themselves roentgenologically in one or more of three ways: (1) by producing a "filling defect," (2) by obstruction or (3) by intussusception (fig. 2). When intussusception is present, histologic identification of the lesion is almost always impossible, since the roentgenologic signs of intussusception obscure those of the primary condition. The roentgenologic diagnosis of intussusception has been described elsewhere [3] and will not be discussed here. Identification of the primary lesion is often difficult when obstruction is present. Only when the obstruction is incomplete can sufficient information be gained by roentgenologic methods to allow an opinion as to the nature of the primary lesion. When deformity, or so-called filling defect, occurs alone, it is frequently possible to identify the pathologic process.

Because the small intestine is a tubular organ, the pathologic processes which occur in it resemble morphologically those which involve the colon. It is possible, therefore, to apply the same roentgenologic criteria of diagnosis to the small intestine as have proved so reliable in the large intestine. The deformity, or "filling defect," produced by a tumefactive lesion may be marginal, encircling or central. An analysis of the morphologic features of this deformity often leads to an accurate estimation of the histologic type.

Fig. 2.—*a*, "filling defect" caused by adenocarcinoma of duodenum; *b*, obstruction in upper part of jejunum with dilatation of bowel aborally caused by adenocarcinoma; *c*, intussusception located in upper part of jejunum caused by polypoid adenocarcinoma.

Nonneoplastic tumefactions of the small intestine are due in most instances to tuberculous or to nonspecific enteritis. The gross pathologic features of these two diseases are strikingly similar. Indeed, it is often difficult to distinguish between the two without the aid of a thorough microscopic examination. Roentgenologically they are characterized by involvement of fairly long segments of bowel. The deformity produced is that of constriction of the lumen of the involved segment (fig. 1). Demarcation between involved and uninvolved intestine is gradual. The mucous membrane may or may not be destroyed by ulceration and the mucosal pattern correspondingly changed. The bowel wall is thick and often adherent to neighboring structures.

Occasionally these two conditions may be distinguished one from the other by the experienced roentgenologist. Nonspecific enteritis on the one hand tends to produce a smooth and uniform narrowing of the barium filled bowel, while the contours of the tuberculous intestine on the other hand have a rougher and more furrowed appearance. Additional aid in the

1. Weber, H. M., and Kirklin, B. R.: Roentgenologic Manifestations of Tumors of the Small Intestine, Am. J. Roentgenol., to be published.

2. Weber, H. M., and Kirkin, B. R.: The Roentgenologic Investigation of the Small Intestine, M. Clin. North America **22**: 1059-1072 (July) 1938.

3. Good, C. A.: Chronic Intussusception of the Small Intestine: Three Cases Diagnosed by Roentgenologic Methods, Proc. Staff Meet., Mayo Clin. **16**: 324-328 (May 21) 1941.

differentiation rests on the exclusion or recognition of an extra-alimentary focus of tuberculosis. In the presence of such a focus the intestinal lesion is likely to be tuberculous.

In contradistinction to the long deformity produced by an inflammatory process, that caused by a neoplasm is relatively short and sharply demarcated in the long axis of the bowel. This is true whether the neoplasm is benign or malignant.

It must be emphasized, however, that there are no reliable roentgenologic signs of benignancy once the diagnosis of blastoma is established. Many neoplasms show microscopic evidence of malignancy whose gross appearance is that of a benign lesion. A neoplasm which shows no evidence of invasion, which is regular in contour and which has not destroyed the intestinal mucosa may be presumed to be benign. Nevertheless, the roentgenologist in reporting such a lesion must keep in mind the possibility that it may show microscopic evidence of malignancy.

The various benign neoplasms of the small intestine exist chiefly as pedunculated intraluminal growths or as intramural submucous nodules. All may cause intussusception, and when such is the case they exhibit no characteristic features by which they may be distinguished.

Pedunculated intraluminal tumors produce central filling defects in the column of the opaque meal. When small, they are easily overlooked. As they grow larger they tend to cause partial obstruction with dilatation of the bowel orally. There are no characteristics by which the various pathologic forms may be distinguished roentgenologically. Adenoma, leiomyoma, lipoma and fibroma are the most important varieties.

Intramural, submucosal tumors exhibit marginal defects with smooth contours (fig. *3a* and *3b*). The mucosal pattern of the intestine is flattened but preserved over the tumor except in cases in which ulceration has occurred. The most common tumor in this category is leiomyoma, although aberrant pancreatic tissue, fibroma and lipoma also are found.

Leiomyoma may be suspected when the marginal defect contains a central niche characteristic of ulceration (fig. 3). These neoplasms, which arise from the intrinsic musculature of the bowel wall, are prone to break down, ulcerate and bleed long before the size of the tumor is sufficient to produce symptoms referable in other ways to the alimentary tract.

In the past three years five such lesions have been found by roentgenologists at the Mayo Clinic. In three of these instances a correct histologic diagnosis was suggested at the time the roentgenologic examination was made. Detailed case reports are available elsewhere.[4]

While there are no sure roentgenologic signs of benignancy once the diagnosis of blastoma is established, malignant lesions frequently produce characteristic roentgenologic manifestations (fig. 4). Chief among the diagnostic signs of malignancy is the obliteration of the mucosal pattern throughout the extent of the lesion. This change in the mucosal relief pattern has a different roentgenologic appearance from that produced by the ulceration of an inflammatory lesion. While the channel through an inflammatory lesion is usually concentric with the lumen of the uninvolved segments of bowel, that through a malignant process is often eccentric. The deformity produced by a malignant tumor is short and sharply limited; it may be marginal or encircling. The demarcation between involved and uninvolved tissue is abrupt. The involved segment is stiffened and, when manipulated, moves as a whole. The relief pattern formed by intestinal mucosa frequently is destroyed entirely; in its place the luminal aspect of the tumor is marked by rough, jagged contours. There may be partial or complete obstruction, and in rare instances intussusception.

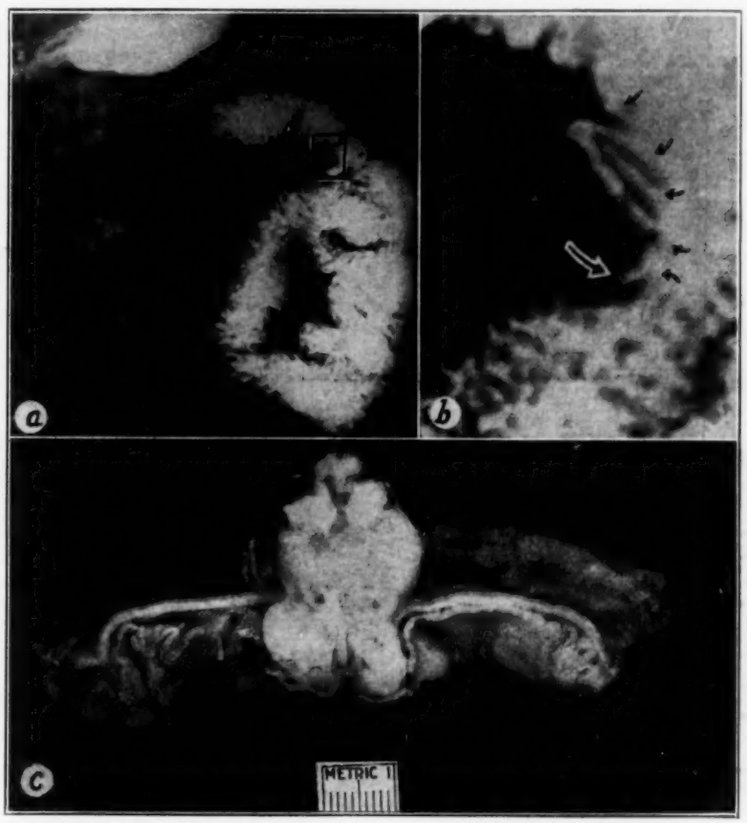

Fig. 3.—*a*, marginal deformity produced by leiomyoma of jejunum; *b*, portion within rectangle in *a*, reproduced on larger scale, showing marginal deformity; note the niche characteristic of ulceration; *c*, section through leiomyoma of jejunum. The tumor is intramural, lying between the mucosa and the serosa.

The most common malignant tumor which involves the small intestine is adenocarcinoma. In a series of 92 cases in which a malignant lesion of the small intestine was noted at the time of surgical exploration, C. W. Mayo [5] found eighty adenocarcinomas and ten leiomyosarcomas. Lymphoblastoma also occurs, but because it responds favorably to radiation therapy it is seldom encountered by the surgeon.

Adenocarcinoma usually produces an annular or polypoid defect in the barium column. Partial obstruction with dilatation of the bowel aborally is common. Fixa-

4. Weber, H. M.; Watkins, C. H., and Good, C. A.: Unpublished data.

5. Mayo, C. W.: Malignancy of the Small Intestine, West. J. Surg. **48**: 403-407 (July) 1940.

tion of the involved segment takes place late in the course of the disease or after perforation. Frequently a mass is palpable which corresponds to the site of the lesion as demonstrated roentgenologically.

The various forms of sarcoma, because they are derived from tissues beneath the mucous membrane, cannot be distinguished from their benign counterparts until such a time as the lesions, because of their size, rapid growth or tendency to infiltrate, exhibit the roentgenologic characteristics of malignancy.

In conclusion, it should be emphasized that the frequency with which lesions of the small intestine are located and identified depends solely on the care taken by the examiner while viewing and manipulating all segments of the bowel during roentgenoscopy. The examination is difficult at best, and greater accuracy in

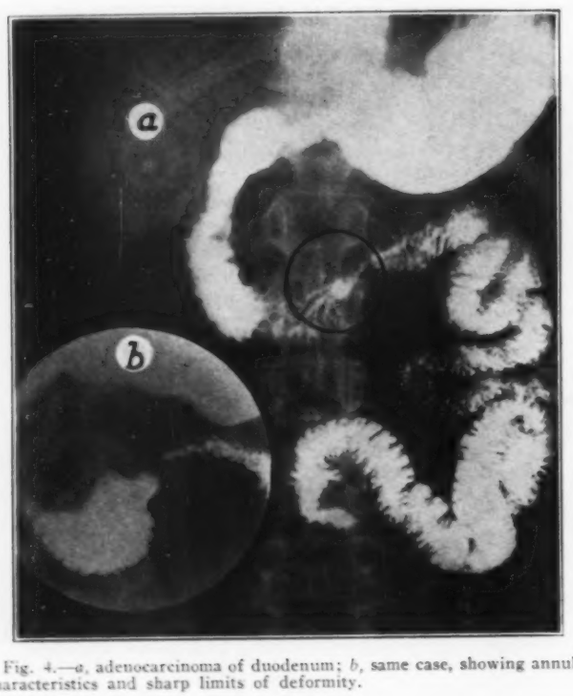

Fig. 4.—*a*, adenocarcinoma of duodenum; *b*, same case, showing annular characteristics and sharp limits of deformity.

diagnosis will come only with greater attention to the detailed scrutiny of every portion of the duodenum, jejunum and ileum.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. MACKIE, DR. GOLDEN, DRS. LEPORE AND GOLDEN AND DR. GOOD

DR. EUGENE P. PENDERGRASS, Philadelphia: The clinical manifestations that are encountered are bizarre, and if the radiologist will only think of vitamin B deficiency as a condition to be considered if abnormalities are encountered, when studying the small intestine, a correct diagnosis may be made when it is not suspected clinically. The roentgen evidence of B deficiency as emphasized by the authors is variable, depending largely on the time that the B deficiency has been operative, but even in early cases there is delayed gastric emptying. The pattern and motility of the small intestine are disturbed. One patient may show hypermotility and another hypomotility. Many have an initial hypermotility followed by hypomotility. I have studied 3 patients, each of whom was vomiting almost everything he ate. The roentgen findings were such that the roentgen diagnosis of vitamin B deficiency was presented for consideration in each of the 3 patients before the B deficiency was suspected clinically. Appropriate vitamin therapy, with careful medical management, was successful in relieving the symptoms of all 3. In this group, after the water barium meal (5 ounces of distilled water, 5 ounces of barium sulfate) the pattern of the small intestine appeared coarse, irregular and beadlike. The cecum appearance time of the head of the meal was delayed. There were collections of gas in the small intestine, but the loops were not overdistended. I would like to comment on the normal salt barium meal referred to by Dr. Golden. I used that mixture for a while but have given it up. The meal travels relatively fast through the small intestine, so much so that it was found to be inconvenient to analyze different portions of the intestine unless one increased the number of fluoroscopic observations. I have therefore returned to the use of a meal of 5 ounces of distilled water and 5 ounces of barium sulfate. The small intestinal pattern of vitamin B deficiency should not cause any difficulty in differentiation from that produced in an uncomplicated allergic individual. The radiologist should always suspect allergy in patients with a rapid small intestinal motility. I refer to instances in which the opaque meal (water-barium) will reach the cecum in fifteen to thirty-five minutes. If the allergen is known and a second study is made, at which time the allergen is added to the opaque meal, disturbances of each or all portions of the gastrointestinal tract may occur. Under such conditions the roentgen manifestations may simulate those of a B deficiency.

DR. DAVID ADLERSBERG, New York: Dr. Michael Weingarten and I presented a paper on "The Small Intestine in Nutritional Deficiency" before the joint meeting of this section and the Section on Gastro-Enterology and Proctology two years ago in St. Louis. At that time we stressed that the small intestine apparently requires large amounts of vitamins for its complicated function of digestion and absorption. It may be that because of this fact the small intestine is an excellent carrier of early symptoms of deficiency. We emphasized the fact that in deficiency states the roentgenographic changes of the small intestine are not specific, that similar changes may be found in cases of pancreatic steatorrhea and, as shown years ago by Dr. Pendergrass, after various drugs (morphine, saline laxatives and so on). Nevertheless, and particularly in association with clinical symptoms, these changes are important diagnostically as a lead to a possible nutritional deficiency. We have been using a fat tolerance test for the diagnosis of these cases. The test consists in determination of the total fat in the blood two to six hours after the administration of a standard fat meal. The lack of fat absorption in some cases of nutritional deficiency is striking and persists even longer than the deficient dextrose absorption. I should like to ask Drs. Lepore and Golden whether in their cases, the symptomatology of which is identical with that described by us, steatorrhea was present. There is some evidence that the vitamin B complex may be responsible for changes of the small intestine, but we don't know which individual factor of the B complex it is. We have to include other vitamins since clinical features point to polyavitaminosis. Our recent studies show that vitamin A and the carotene content in the blood of these patients may be very low and it is difficult to raise these low levels, even with large amounts of vitamins. We prefer at the beginning the parenteral route because of the impaired intestinal absorption. We had good results with large amounts of crude liver extract and the known constituents of vitamin B. The addition of lecithin to the diet of these patients had a favorable effect on the intestinal symptoms and the general condition. We had proposed for the intestinal changes associated with or possibly caused by nutritional deficiency the name "chronic enteropathy."

DR. MERRILL C. SOSMAN, Boston: I should like to express my conservatism without implying any criticism at all of the work which has been presented. I should like to emphasize that in any large number of consecutive gastrointestinal examinations one will find about 45 to 50 per cent of patients with some definite demonstrable lesion. That leaves 50 to 55 per cent of patients with no demonstrable lesions. What are we going to do with that 50 to 55 per cent? Almost all of them fit perfectly into this clinical picture, which has been so beautifully presented here. They have discomfort after eating, they have intermittent constipation, and they are relieved by catharsis. There are several places where that 55 per cent, since nothing else can be found, are all designated as "unhappy colons," and they are definitely improved by the so-called bland colonic diet.

I know another place where they are all classified as having insufficient biliary secretion or absorption, and they are much improved by being fed bile salts. Now, shall we, as radiologists, throw ouselves into that fight and classify that 55 per cent as vitamin B deficiencies and help the drug stores? We certainly are very vitmain conscious nowadays, and I put this little gibe in here, hoping that we will not throw the roentgen ray into the position it was in after the World War, when so many diagnoses of "peribronchial tuberculosis" were made because we could not have better films. If we focus a great deal of attention on the small bowel, we are bound to see a lot of abnormalities, but I am sure that those abnormalities will vary from day to day in the same individual, as Dr. Golden has shown, as the result of emotion, worry, fear, changes in diet and allergies, as Dr. Pendergrass mentioned, or of drugs, as Drs. Lepore and Golden mentioned. So I feel that we should be conservative about making any large number of diagnoses of vitamin B deficiency until we have a definite, accurate test of what vitamin B deficiency really is. We do not have that yet, and I do not think that the response to therapy in the human individual can be a very reliable check on the diagnosis. I express this sincerely, with no criticism at all of the material that has been presented.

DR. ROSS GOLDEN, New York: Drs. Mackie and Adlersberg mentioned the fact that no single factor in the vitamin B complex was found to be specifically involved in these disturbances of the small intestine. All the workers have emphasized the fact that the whole vitamin B complex has to be given to make the patients well. It seems that a number of vitamin B fractions are concerned in normal nerve physiology. Therefore it is quite possible that a lack of any one of them, for example thiamine or nicotinic acid—or any of them which take part in the enzyme systems involved in the transfer of oxygen—might conceivably result in this disturbance in physiology of the small intestine. This point illustrates the usefulness of the concept of a neurogenic mechanism which makes it possible to explain various apparently contradictory phenomena. We have no idea how extensively a lack of vitamin B, through its effect on nerve physiology, may disturb intestinal digestion and absorption. Dr. Adlersberg mentioned the relationship between vitamin B and the level of vitamin A in the blood. Mottram, Cramer and Drew in 1922 showed that the absorption of fat from the intestine is abnormal in the absence of the vitamin B complex. Vitamin A is fat soluble and would not be absorbed properly without the B complex. I should like to comment approvingly on Dr. Good's use of the pressure apparatus in studying the small intestine. Abnormal conditions can be shown that way, particularly in the ileum, which cannot be shown in any other way. With regard to the normal saline and the barium suspension, we seem to be able to get satisfactory studies of the entire small intestine with it. Dr. Sosman has warned you not to make too many of these diagnoses. I should like to emphasize that we do not make diagnoses. In past years we failed to note and to appreciate the significance of these intestinal abnormalities which we now demonstrate and call to the attention of the clinician as a nonspecific effect. We call this a "deficiency pattern" of the small intestine because it is seen most frequently in patients who get well following proper treatment with the vitamin B complex. However, it may be due to other things in which a vitamin B deficiency may or may not be concerned directly or indirectly, in particular to liver disease and to disorders associated with hypoproteinemia. Such information, presented as a lead, not as a diagnosis, is often of much help to the clinician. Then, of course, other things should be done which Drs. Lepore and Golden described, for example the dextrose tolerance test and the test for capillary fragility. If we continue to pay no attention to these changes in the small intestine we shall fail to help many patients who can easily be helped.

DR. MICHAEL J. LEPORE, New York: In answer to Dr. Adlersberg's question, steatorrhea was not observed in the patients in this series. Microscopic observations were made but we did not have chemical analyses for stool fat. However, since we know that these patients are on high carbohydrate and low fat diets, it may be that a stool fat examination by microscope would be a little misleading. These cases should be studied from the point of view of fat metabolism, and plans are being made to do that type of investigation. I think the type of experiment that should be done is to feed these patients measured quantities of fat and see how they handle that fat. So far as the other vitamin deficiencies which occur in association with this syndrome, we have not made any studies of those and we are in no position to make any definite statements. If one remembers that the small bowel is the site of absorption of these other materials, it may be that the vitamin B complex deficiency is primary and that the other defects which are seen are due to poor absorption. As far as parenteral therapy is concerned, in our group of patients, at any rate, most of them responded very well to oral medication. Those patients who had hypochlorhydria or anacidity did poorly, and in those cases we had to resort to parenteral therapy. I think it is well to avoid parenteral therapy in clinical practice if oral therapy can give satisfactory results.

DR. C. ALLEN GOOD, Rochester, Minn.: For many years the examination of the small intestine was relegated to the back door of radiology. Films were taken at intervals but very little attention was paid to them. I should like again to plead for individualization of the examination of the small intestine. It is extremely important to view every segment of duodenum, jejunum and ileum during fluoroscopy. This can be done best not by examining the patient at half hourly or hourly intervals but by timing the frequent roentgenoscopic examinations to the progress of the meal. With some patients this will necessitate fluoroscopic observations every fifteen minutes; with others the interval may be as long as an hour. When looking for small organic lesions it is important to watch a peristaltic wave as it traverses a segment of bowel, since this wave dilates the intestine sufficiently to bring out any small defect which may be present. As Dr. Golden has stated, the radiologist should use pressure devices, "spot" roentgenograms or other special equipment if the use of such equipment assists in obtaining a better examination of the intestine.

Clinical Notes, Suggestions and New Instruments

MASSIVE HEMATURIA FOLLOWING USE OF HEPARIN IN CAVERNOUS SINUS THROMBOSIS

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Cavernous sinus thrombosis of the acute fulminating type has always been accompanied by an exceedingly high mortality. In reports of recoveries from this grave disease in the past, the accuracy of the diagnosis has frequently been open to question or criticism. Recently, however, well authenticated reports of recovery following the use of the sulfonamides have begun to filter into the current literature.

In 1940 Schall [1] successfully treated 3 cases of cavernous sinus thrombosis and 1 case of longitudinal sinus thrombosis with a combination of sulfathiazole and heparin. These cases were later reported in part by Lyons.[2] Morrison and Schindler [3] reported 1 case in which a cure was brought about by sulfapyridine alone, while the Wolfes [4] report still another recovery using sulfathiazole.

The case reported here, in addition to increasing the number of known recoveries, also presents some unique conditions not heretofore encountered. Massive hematuria has not been reported in connection either with cavernous sinus thrombosis or with the use of heparin in any other condition.

From the Student Health Service and the Department of Otolaryngology, Syracuse University.

1. Schall, L. A.: Personal communication to the authors.
2. Lyons, Champ: The Treatment of Staphylococcal Cavernous Sinus Thrombophlebitis with Heparin and Chemotherapy, Ann. Surg. **113**: 113 (Jan.) 1941.
3. Morrison, L. F., and Schindler, Meyer: Cavernous Sinus Thrombosis, Report of Recovery Following Sulfapyridine Therapy, Arch. Otolaryng. **31**: 948 (June) 1940.
4. Wolfe, C. T., and Wolfe, W. C.: Treatment of Thrombosis of Cavernous Sinus with Recovery, Arch. Otolaryng. **33**: 81 (Jan.) 1941.

In 1926 Eagleton[5] pointed out certain factors essential to the diagnosis of cavernous sinus thrombosis:

1. Known site of infection.
2. Evidence of blood stream infection.
3. Early signs of venous obstruction in the retina, conjunctiva or eyelid.
4. Paresis of the third, fourth and sixth nerves resulting from the pressure of inflammatory edema.
5. Formation of an abscess in the neighboring soft tissues.
6. Evidence of meningeal irritation.

Until the advent of the sulfonamides most cases of this type presented, in addition to Eagleton's postulates, postmortem aspects. In the light of our present knowledge of chemotherapy it has become necessary to recognize the condition before all these postulates have become manifest if successful treatment is to be instituted.

REPORT OF CASE

A college girl aged 22, white, was admitted to the student infirmary Dec. 6, 1940 because of sore throat and fever. This illness was a simple coryza which subsided in forty-eight hours, and she was discharged December 8. The following day headache, a small swelling in the left nasal vestibule and mild inflammation of the left ethmoid and maxillary sinuses developed. In spite of local treatment these symptoms progressed and on the next day, because of fever, increasing headache and pain over the root of the nose and left cheek, she was readmitted to the infirmary.

Physical examination at this time revealed a rectal temperature of 101 F., slight edema of the left lower eyelid and a red indurated area in the left nasal vestibule. The remainder of the physical examination was essentially negative and the diagnosis was furuncle of the left nasal vestibule. In addition to local treatment sulfanilamide was administered, since a culture taken from material from the throat revealed an increase in the number of beta hemolytic streptococci. Twenty-four hours after admission the furuncle in the left nasal vestibule began to drain spontaneously. Culture of this pus yielded Staphylococcus aureus, and consequently sulfathiazole was substituted for sulfanilamide. In spite of an apparent general improvement the swelling about the left eye increased and the following day the left angular vein could be palpated as a definite cordlike structure. Ligation of this vein was considered but was deemed inadvisable. Her condition had remained stationary for about twenty-four hours, at which time she suddenly had a shaking chill lasting twenty minutes. Beginning thrombophlebitis of the left cavernous sinus was now suspected. Within the next few hours there developed a definite increase in the swelling of the left eye and some swelling of the lids of the right eye. Definite mental retardation was also present, but neurologic examination yielded no abnormalities. Lumbar puncture was not performed because at no time was there any evidence of meningeal irritation. The patient was transferred to the university hospital that morning, December 13. On admission the lids of both eyes were red and edematous, but muscle excursions were normal in all directions. There was no proptosis and the conjunctivas were normal and showed no edema. The margins of both optic disks were blurred, particularly on the nasal side, and the retinal vessels, both veins and arteries, were definitely dilated. Both retinas were clear and there was no gross contraction of the peripheral visual fields. It was now felt that the diagnosis of cavernous sinus thrombosis was definitely established. Blood cultures taken on admission to the hospital and again four days later remained sterile.

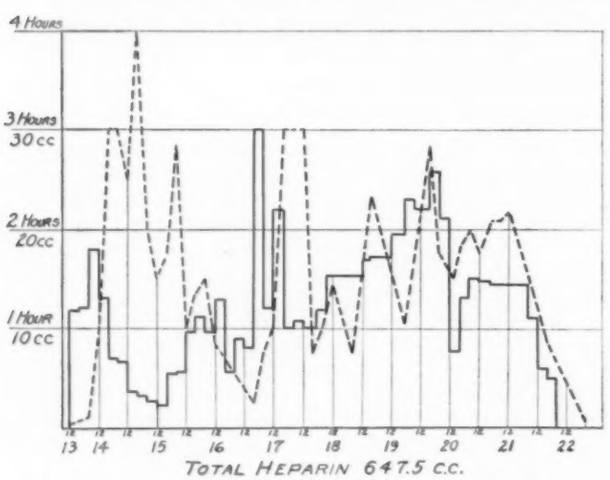

Fig. 1.—Relation of heparin to clotting time. Broken line indicates time in hours; solid column indicates heparin in cubic centimeters for preceding four hour period.

Fig. 2.—Appearance of patient on third day of disease.

Since one of us (I. H. B.) had recently treated a patient with cavernous sinus thrombosis unsuccessfully with sulfathiazole alone, it was thought that a combination of this drug with heparin as an anticoagulant might yield a better result. The previously noted successes of Schall[1] with this combination seemed to make such a hypothesis even more tenable. Accordingly, heparin therapy was instituted at noon on December 13, the day of admission to the hospital. Sulfathiazole was continued in doses of 1 Gm. every three hours.

Throughout the entire treatment the strength of the heparin solution averaged 4 per cent.[6] Vehicles used for this were physiologic solution of sodium chloride, 5 per cent dextrose solution and lactated Ringer's solution. These were all given by continuous intravenous infusion, and the amount of heparin administered was controlled by the speed with which the solution was allowed to drip. Every four hours during the nine day period that the infusion was running the blood coagulation time was determined by the 8 mm. tube method of Lee and White.[7] Prior to starting heparin therapy the blood coagulation time was two and one-half minutes. Four hours after the therapy was started the coagulation time was seven minutes. Thereafter, as can be seen by figure 1, the rise in coagulation time was rapid, so that sixteen hours after the treatment was started the coagulation of the blood was delayed to three hours. An effort was made to maintain a figure of approxi-

5. Eagleton, W. P.: Cavernous Sinus Thrombophlebitis, New York, The Macmillan Company, 1926.

6. To make this solution 40 cc. of a solution of heparin, of which each cubic centimeter contained 200 anticoagulant units, was diluted with sufficient vehicle to make 1,000 cc.

7. Lee, R. I., and White, P. D.: A Clinical Study of the Coagulation Time of Blood, Am. J. M. Sc. **145**: 495 (April) 1913.

mately one hundred and twenty minutes. In order to effect this, the speed with which the solution was allowed to run was materially diminished or accelerated, depending on the determination for each previous four hour period. Throughout the nine day period a total of 647.5 cc. of the heparin solution was used.

Sulfathiazole was given continuously (with one interruption of thirty-three hours) throughout the first twenty-seven days of the patient's hospital stay. A total of 106 Gm. was administered. The only toxic effects that could conceivably have been attributed to this drug were one fleeting episode of nausea and a transitory erythematous rash on the trunk and extremities. Both of these episodes cleared within a few hours without any reduction of the dose of sulfathiazole. Levels of total sulfathiazole in the blood varied between 11.7 and 4.7 mg. per hundred cubic centimeters, the average being 8.15 mg. At no time could there be noted any correlation between the sulfathiazole level in the blood and the clinical condition of the patient.

The furuncle in the nasal vestibule continued to drain well for the first twenty-four hours after the heparin was started through openings which had ruptured spontaneously inside the nose as well as externally. Following this, the purulent discharge ceased but, the coagulation time being delayed to approximately three hours, there was a constant bloody ooze from the infected areas of the nose, which persisted until the heparin was stopped.

Within twenty-four hours after the heparin was first administered the swelling about the eyes began to diminish and the induration about the nasal vestibule began to disappear. Likewise, there was a gradual return of the optic disks and blood vessels to normal. The local manifestations continued to improve daily irrespective of the patient's general condition.

Because of obvious difficulties, stereoscopic roentgen examination of the skull was deferred until after the continuous intravenous infusion was stopped. This examination was made on December 24, eleven days after admission. At this time the roentgenograms showed the nasal accessory sinuses to be relatively clear, but there was some hazing of the left petrous ridge. No change was seen in the body of the sphenoid bone. Repeated roentgen examinations on December 31 and January 9 revealed no change from the original examination.

Fig. 3.—Appearance of patient on sixth day of disease.

Two days after the infusion of heparin was begun the urine began to appear smoky. Microscopic examination revealed the presence of innumerable erythrocytes in the urinary sediment. During successive days the hematuria continued and increased to such an extent that the urine had almost the appearance of blood obtained by venipuncture from an anemic patient. Large amounts of alkali given both orally and by vein maintained the urinary p_H over 8.2. It therefore seemed unlikely

Fig. 4.—Appearance of patient on thirteenth day of disease.

that sulfathiazole calculi could be causing this bleeding. Further, daily microscopic examinations of the urinary sediment failed to reveal the presence of any crystals. There was no evidence of acute nephritis as a cause of the hematuria. The blood pressure remained within normal limits; there was neither nitrogen retention nor peripheral edema, and there were no formed elements in the urinary sediment other than the red blood cells. Because of the progressive anemia (shown in the table) daily transfusions had been started on the same day that the smoky urine was first noted. It seemed unlikely that reactions to this blood could be causing the urinary bleeding. There were no chills and no unusual elevations in the temperature curve. Also the severe alkalinity of the urine along with careful cross matching of blood seemed to preclude this possibility.

Summary of Blood Counts and Transfusions

Date	Hemoglobin, Gm.	Red Blood Cells	White Blood Cells	Comment
12-13-40	13.0	4,210,000	10,500	Heparin begun
12-15-40	11.5	3,850,000	9,100	Transfusion, 250 cc.
12-16-40	10.5	3,030,000	10,100	Transfusion, 250 cc.
12-17-40	10.5	3,230,000	11,100	Transfusion, 250 cc.
12-18-40	10.0	2,970,000	9,650	Transfusion, 250 cc.
12-19-40	9.5	3,340,000	12,200	Transfusion, 250 cc.
12-20-40	8.0	2,740,000	15,250	Transfusion, 250 cc.
12-21-40	7.5	2,520,000	16,100	Heparin discontinued; transfusion, 250 cc.
12-22-40	8.5	2,570,000	10,900	Transfusion, 500 cc.
12-23-40	10.0	2,880,000	13,150	Transfusion, 500 cc.
12-24-40	12.5	3,750,000	10,500	Transfusion, 500 cc.
12-25-40	14.0	4,550,000	11,800	
12-26-40	13.0	3,900,000	9,400	
12-27-40	14.0	4,210,000	14,150	
12-28-40	15.5	5,260,000	7,600	
12-29-40	15.0	4,950,000	7,300	
1- 2-41	14.0	5,080,000	7,300	
1- 6-41	15.0	5,450,000	13,200	

Total blood by ten transfusions, 3,250 cc.

Consequently it was felt that the hematuria occurred as a result of oozing and bleeding in the kidneys, and possibly the entire urinary tract, secondary to the artificially produced hemorrhagic diathesis. Owing to the patient's precarious condition

cystoscopy was not performed, but subsequent events seemed to confirm the aforementioned opinion.

On December 21, nine days after admission, the patient's condition seemed desperate. The anemia had progressed dangerously in spite of daily transfusions, and the general clinical picture seemed to have taken a decided turn for the worse. There were several ecchymotic and purpuric areas scattered over the extremities. These were especially well defined in the antecubital fossae and in other areas in which veins had been punctured. Also there was evidence of hemorrhage into both elbow joints, and the urine at this time seemed to be frank blood containing many fair sized clots. Moreover, it was with great trepidation that we were looking forward to the onset of a soon expected menstrual period. Consequently, at 8 p. m., nine days after therapy was started, both sulfathiazole and heparin were discontinued. Thirteen hours later the urine was grossly clear but contained a moderate number of red blood cells on microscopic examination. The patient's general condition seemed much improved, but within a few hours a chill and a decided rise in temperature caused us to resume the administration of sulfathiazole.

Heparin was not given again, and in spite of the continued administration of sulfathiazole the prompt cessation of the urinary bleeding remained permanent. Successive specimens of urine were all clear grossly and within a few days not even microscopic blood could be visualized. The purpura cleared rapidly and the previously immobile elbow joints rapidly resumed normal function. The blood coagulation time promptly returned to normal and three blood transfusions (500 cc. each) brought the hemoglobin content and red blood cell count back to normal in a few days.

Within five days after the readministration of sulfathiazole, the temperature fell by lysis to normal, where it has since remained. The general clinical improvement was striking. Twelve days after sulfathiazole therapy was resumed it was discontinued again. The patient continued well and was discharged from the hospital apparently cured on the thirtieth day after admission.

SUMMARY

Although this case of cavernous sinus thrombosis with recovery does not fulfil all of Eagleton's postulates, we believe that the diagnosis is tenable because of the clinical course of events following a furuncle of the nasal vestibule. Also present were signs of venous obstruction in the retinas and eyelids. Although the blood cultures were sterile, the fact that there were definite shaking chills may be taken as presumptive evidence of blood stream invasion at those times. Since the patient received large doses of sulfathiazole as soon as the furuncle became manifest, prior to the thrombosis of the cavernous sinus, it seems reasonable to suppose that this drug maintained the sterility of the blood cultures. By the same token it prevented the occurrence of meningitis and soft tissue abscesses with inflammatory involvement of the third, fourth and sixth cranial nerves. The hazy appearance of the left petrous ridge on roentgen examination also suggests the presence of infection in this area and tends to support the diagnosis.

A striking feature complicating the treatment in this case was the profound hematuria which persisted in spite of daily blood transfusions. There is evidence to show that this finding was due to the hemorrhagic diathesis artificially produced by the administration of heparin. Almost immediately after the heparin was discontinued the urinary bleeding stopped, the anemia responded to treatment and the clotting time returned to normal.

CONCLUSIONS

1. Theoretically the combination of heparin and sulfathiazole should yield better results in the treatment of cavernous sinus thrombosis than any other measures previously employed. Heparin prevents extension of the thrombus, thus allowing for its lysis. Sulfathiazole not only affords an effective means of combating the original focus of infection but maintains the sterility of the blood stream, thereby preventing meningitis, septic emboli and other sequelae.

2. The intravenous administration of heparin produces a significant prolongation of the coagulation time, which is in fact a hemorrhagic diathesis. Consequently there may be produced dangerous bleeding in vital areas of the body. Our case presented profound renal bleeding from which there were no serious sequelae. Bleeding from cerebral, pulmonary or coronary vessels might conceivably result in disaster.

608 East Genesee Street—713 East Genesee Street.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THERAPY WITH PREPARATIONS OF PANCREAS

RUSSELL M. WILDER, PH.D., M.D.
ROCHESTER, MINN.

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—ED.

Pharmaceutic preparations of internal secretions of the pancreas are limited to insulin, modified insulins and lipocaic. Insulin is a secretory product of the beta cells of the islands of Langerhans; lipocaic may represent a secretion of the alpha cells of these islands. Evidence supporting this assumption has been presented by Dragstedt [1] and by Bensley and Woerner.[2]

INSULIN

The principal use for insulin is in the control of diabetes. For this purpose it is indispensable. It has found employment also in the treatment of schizophrenia and in the management of malnutrition in certain cases. Claims have been made that the addition of insulin to the dextrose commonly given to patients with disease of the liver and to others following surgical operations is advantageous.

Preparations of Insulin.—Insulin is a protein. Its molecular weight approximates that of egg albumin. It is made available commercially as a buffered solution of insulin hydrochloride in water. For many years this was the only form in which it was dispensed, and therefore at present this preparation is spoken of as "old insulin," "regular insulin" or "unmodified insulin." A more satisfactory term would be "solution of insulin hydrochloride."

Neither the free protein nor the hydrochloride has been crystallized, but salts of insulin with zinc, cadmium or other metals have been prepared in crystalline form (first by Abel), and a solution of zinc insulin crystals was made available commercially early in 1939. It was claimed originally that the action of this preparation was significantly retarded as compared with the action of solution of insulin hydrochloride. These claims, however, have not been substantiated.[3] Solution of crystal-

From the Division of Medicine of the Mayo Clinic.

1. Dragstedt, L. R.: The Present Status of Lipocaic, J. A. M. A. **114**: 29-32 (Jan. 6) 1940.

2. Bensley, S. H., and Woerner, C. A., cited by Woerner, C. A.: The Effects of Continuous Intravenous Injection of Dextrose in Increasing Amounts on the Blood Sugar Level, Pancreatic Islands and Liver of Guinea Pigs, Anat. Rec. **75**: 91-105 (Sept.) 1939.

3. (*a*) Ricketts, H. T., and Wilder, R. M.: Solutions of Amorphous Insulin and Solutions of Zinc Insulin Crystals: Clinical Studies on the Comparative Speed and Duration of Action, J. A. M. A. **113**: 1310-1312 (Sept. 30) 1939. (*b*) Marble, Alexander, and Vartiainen, Ilmari: Crystalline Insulin, ibid. **113**: 1303-1309 (Sept. 30) 1939. (*c*) Jackson, R. L., and Boyd, J. D.: Relative Efficiency of Commercial Forms of Insulin, Proc. Soc. Exper. Biol. & Med. **41**: 15-16 (May) 1939.

line zinc insulin represents an insulin of high purity, and that it should give rise to fewer dermal allergic reactions is probable.[3b]

Retard Insulin: A number of means have been employed in attempts to retard the speed of action of insulin and thereby to prolong the duration of activity of a given dose. The only one of the "retard preparations" available commercially in America is protamine zinc insulin. This substance is insoluble at the p_H of the tissue, and thus absorption from the site of injection proceeds slowly. The amount of zinc contained is 1 mg. per 500 units of insulin, which is harmless. Hagedorn,[4] of Copenhagen, introduced protamine insulin in 1937. Protamines are basic polypeptides. They have been obtained from the sperm of trout, mackerel and salmon. Scott and Fisher,[5] of Toronto, added zinc, after noting that protamine had little effect on the rate of absorption of purified amorphous insulin. The original Danish preparation presumably contained metallic impurities.

Strength of Preparations of Insulin.—The strength of insulin is expressed in units. A unit as now defined is a twenty-second part of a milligram of a preparation of zinc insulin crystals in the possession of the National Institute for Medical Research, London, England. All forms of commercial insulin are dispensed in 5 or 10 cc. rubber-capped vials in various concentrations designated "U-20," "U-40," "U-80" and so forth, to indicate the number of units contained in 1 cc.

Administration of Insulin.—Insulin is inactivated by the gastric enzymes and is not absorbed by the rectum or colon. Parenteral administration is therefore obligatory. Soluble preparations of insulin, but not protamine zinc insulin, may be given by vein. Resort to intravenous injection, however, is limited to emergencies; the usual method of administration is by subcutaneous injection.

None of the so-called antidiabetic pancreatic preparations reputed to be effective when taken by mouth have withstood rigid clinical testing. Claims that any such preparations exert a rejuvenating or stimulating action on the diseased pancreas have not been established.

Control of Diabetes with Insulin.—The theory which underlies the administration of insulin in diabetes mellitus is that of substitution therapy. Insulin is injected to provide for utilization of the dextrose which enters the circulation from the liver or is absorbed from the intestines; the dosage depends on the degree of pancreatic efficiency, on the intensity of activity of hormonal and nervous mechanisms opposed to the action of insulin and on the character of the diet. In the milder form of diabetes glycosuria usually can be controlled by limiting the intake of carbohydrate. In such cases insulin is not indicated. When the degree of insular (pancreatic) insufficiency is greater or when abnormal contrainsular activity, such as is encountered with hyperthyroidism, infection and other complications, is present, insulin must be used. It is unwise to sacrifice the nutrition of a patient simply to avoid the necessity of giving insulin.

It rarely is possible to obtain satisfactory control of severe diabetes with protamine zinc insulin alone. When the total dose of insulin required exceeds 20 or 30 units, injections of supplementary unmodified insulin are desirable in most cases to prevent gross glycosuria after meals. The ideal use of insulin would be to imitate the action of the normal pancreas. This, as Lawrence and Archer[6] suggested, probably involves (1) a continuous secretion of small amounts of insulin and (2) an increase in the secretion of insulin after meals to deal with ingested carbohydrate. No one type of insulin therapy can imitate both aspects satisfactorily. Protamine zinc insulin provides well for the small continuous supply required during the night, but if given in doses large enough also to control the glycosuria which follows meals, it provokes hypoglycemia in the night. Unmodified insulin acts quickly and is best adapted to meet the requirement for more insulin activity at meal times. These considerations led Lawrence and Archer[6] and Graham[7] to attempt the simultaneous injection from one syringe of both protamine zinc insulin and unmodified insulin. In the mixture some of the soluble insulin may be bound by the excess of protamine present in the protamine zinc insulin, but even so irregularities of action from day to day are little more conspicuous than when the two insulins are injected into separate sites. This also has been the experience of Warvel and Shafer[8] and of Himsworth.[9] The latter stated:

> It is only in mild cases that the new preparations may legitimately be expected to control the disease during the whole twenty-four hours. . . . In cases of any severity their action should be reinforced by the administration of ordinary insulin at those times when a sudden influx of sugar from the intestine is found to overwhelm their mild action. An analogy may be drawn between the use of the new insulin and a modern technique in anaesthesia. The protamine insulins are comparable to the basal anaesthetics whose effect is both mild and prolonged; ordinary insulin is comparable to the volatile anaesthetic which is superimposed at times when a stronger control is required.

I have adopted the technic of mixing unmodified and protamine zinc insulin in one syringe, with satisfactory results.[10] In most cases adequate control both of postabsorptive and postprandial glycosuria can be obtained by this means with only one injection a day, the injection being made before breakfast. It is important to draw the dose of unmodified insulin into the syringe first, to avoid introducing any alkaline protamine zinc insulin into the bottle of unmodified insulin. The patient is taught to adjust the components of the mixture of insulins so that the urine passed before breakfast and before the evening meal will contain small traces of sugar. This degree of glycosuria is compatible with freedom from ketosis, stability of the nitrogen balance, normal growth of children and maintenance of normal body and mental vigor, whereas by avoiding more rigid control of glycosuria the danger from insulin reactions is minimized.

Insulin Reactions.—The hypoglycemia which results from overdoses of insulin entails more serious danger of provoking injury than is commonly appreciated. If an insulin reaction can be combated early, serious consequences almost always are avoided, but otherwise lasting danger may be done to the central nervous system. The lesions observed in the brain in fatal cases consist of hemorrhages, perivascular infiltration of round cells, atrophy of the cortex and swelling of the glia and axis-

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5. Scott, D. A., and Fisher, A. M.: Studies on Insulin with Protamine, J. Pharmacol. & Exper. Therap. **58**: 78-92 (Sept.) 1936.

6. Lawrence, R. D., and Archer, Nora: Zinc Protamine Insulin: A Clinical Trial of the New Preparation, Brit. M. J. **1**: 487-491 (March 6) 1937.

7. Graham, George: The Use of a Mixture of Ordinary and Protamine Insulin, Acta med. Scandinav., 1938, supp. 90, pp. 54-63.

8. Warvel, J. H., and Shafer, M. R.: Protamine Insulin in the Treatment of Diabetes Mellitus, J. Indiana State M. A. **30**: 325-332 (July) 1937.

9. Himsworth, H. P.: Protamine Insulin and Zinc Protamine Insulin in the Treatment of Diabetes Mellitus, Brit. M. J. **1**: 541-546 (March 13) 1937.

10. Wilder, R. M.: Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia, W. B. Saunders Company, 1940, pp. 91-95.

cylinders.[11] The danger is greater when protamine zinc insulin is used. This probably is explained by the fact that the blood sugar after administration of protamine zinc insulin is lowered so gradually that early symptoms of insulin reaction may be unobserved. Much chronic debility is now encountered among patients who are misusing protamine zinc insulin. It is characterized usually by headaches and asthenia, but in some cases sensory and motor neuritis are observed, and in others severe psychopathic conditions. Permanent idiocy has been recorded as a sequel of induced hypoglycemia by two groups of observers,[12] and the number of fatalities attributable to overdosage of insulin and to induction of insulin collapse (shock) for the treatment of schizophrenia is not inconsiderable. This accumulated experience has led me to the opinion that the control of diabetes with insulin should be less rigid than heretofore has been demanded.

Treatment of Schizophrenia with Insulin.—The resort to insulin collapse (shock) in the treatment of schizophrenia was introduced by Sakel.[13] The insulin shock has been employed extensively in psychopathic hospitals. It is a dangerous procedure with a relatively high mortality and should be undertaken only by physicians who are thoroughly familiar with the method. Other convulsants unrelated to insulin also bring about an improved condition in patients with mental disorders.

Insulin Treatment for Addiction to Morphine.—Insulin therapy for symptoms of morphine withdrawal, as proposed by Sakel,[14] has not met with critical approval.[15]

Insulin Treatment for Anorexia.—Insulin is much used to induce appetite and hunger and thereby to increase consumption of food. The results reported are variable. The greatest effectiveness is observed when the use of insulin is combined with strong suggestion. Heinz and Palmer[16] could demonstrate no consistent effect on the contractions of the empty stomach or the hunger pangs.

Insulin Combined with Dextrose for Nondiabetic Abnormalities.—After an operation the patient may exhibit diminished ability to utilize dextrose from several causes, none of which involves any permanent derangement of the endocrine function of the pancreas. Among such causes are starvation, anesthesia and surgical trauma. The use of insulin in the treatment of the glycosuria and occasional acidosis which may follow operations on nondiabetic patients was frequently recommended after the discovery of insulin, but more recently it has been largely abandoned. Experimental evidence for increased rates of utilization of dextrose by normal subjects given insulin is not striking, and the temporary depression of tolerance for dextrose as well as the accompanying ketosis which results from fasting can be overcome rapidly by administration of dextrose alone.[17]

11. Malamud, N., and Grosh, L. C., Jr.: Hyperinsulinism and Cerebral Changes: Report of a Case Due to an Islet Cell Adenoma of the Pancreas, Arch. Int. Med. **61:** 579-599 (April) 1938. Moersch, F. P., and Kernohan, J. W.: Hypoglycemia: Neurologic and Neuropathologic Studies, Arch. Neurol. & Psychiat. **39:** 242-257 (Feb.) 1938.

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LIPOCAIC

The name "lipocaic" was given by Dragstedt, Van Prohaska and Harms[18] to an extract of beef pancreas which prevented the fatty infiltration and degeneration that commonly develop in the livers of depancreatized dogs when such dogs are maintained alive with insulin and do not receive fresh pancreas, lecithin or choline. The existence of a condition exactly similar to this has not frequently been recognized in diabetes of human beings. There have been, however, two reports of cases[19] in which hepatomegaly did not respond to insulin or diet but receded after administration of lipocaic. Also of interest from the clinical standpoint is the observation of Dragstedt and his associates[20] of arteriosclerosis in 6 depancreatized dogs in which for a period of from six to nine months the diabetes was well controlled with insulin, while fatty liver was intermittently permitted to develop by intermittently withholding treatment with lipocaic. Spontaneous arteriosclerosis of the degree observed is exceedingly rare in the domestic dog, so that the observation seems to be significant. It may have a bearing on the question of frequent occurrence of arteriosclerosis among diabetic patients.

Commercial preparations of lipocaic are not as yet available, largely owing to the fact that a satisfactory economical method of assay has not been developed.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ILGAIRATOR WITH DUST-STOP FILTER ACCEPTABLE

Manufacturer: ILG Electric Ventilating Company, 2850 North Crawford Avenue, Chicago.

The Dust-Stop Filter, manufactured by the Owens-Corning Fiberglas Corporation, Toledo, Ohio, installed in an Ilgairator unit AF-t, is intended to be placed in a window frame for filtering the pollen from the air passing through the filter. The filter proper consists of a mass of closely packed, spun glass, soaked in tricresyl phosphate, in a cardboard frame and measures 11¾ by 17¾ by 2 inches.

Ilgairator with Dust-Stop Filter.

The Ilgairator unit is contained in a metal cabinet with side panels which may be extended to fit an ordinary window frame. When mounted in the window, the cabinet extends over the sill into the room. Intake louvers are located on the back, or that portion of the cabinet outside the window; outlet louvers at the front of the cabinet may be directed at any angle. A three bladed motor, so mounted as to eliminate as much vibration as possible, draws the air through the filter which is fixed against the intake louvers. A variable speed control regulates the air intake.

18. Dragstedt, L. R.; Van Prohaska, John, and Harms, H. P.: Observations on a Substance in Pancreas (a Fat Metabolizing Hormone) Which Permits Survival and Prevents Liver Changes in Depancreatized Dogs, Am. J. Physiol. **117:** 175-181 (Sept.) 1936.

19. Grayzel, H. G., and Radwin, L. S.: Hepatomegaly in Juvenile Diabetes Mellitus Treated with Pancreatic Extract, Am. J. Dis. Child. **56:** 22-32 (July) 1938. Rosenberg, D. H.: Proved Case of Recovery from Fatty Metamorphosis of the Liver After Treatment with Lipocaic, Am. J. Digest. Dis. **5:** 607-613 (Nov.) 1938.

20. Dragstedt, L. R.; Goodpasture, W. C.; Vermeulen, C., and Clark, D. E.: Arteriosclerosis in Depancreatized Dogs, Am. J. Physiol. **126:** P479-P480 (July) 1939.

Detailed reports of examinations conducted by the research laboratories of the firm were submitted and described the efficiency of the filter in removing pollen from the air. The first of these reports incorporates the results found when the filter was tested in a modification of the Rowley filter testing apparatus, in which a plenum chamber was used for obtaining an even distribution of pollen during the test. A summary of the results found by use of this apparatus disclosed that the Dust-Stop No. 2 Filter had an average efficiency of 98 per cent when tested at velocities of 300, 400 and 500 feet per minute.

The second series of examinations conducted by the research laboratories of the firm showed that the average overall efficiency of the 2 inch filter after two hundred and sixteen hours of testing was 97.6 per cent.

In the Council's examination of the unit it was mounted in a window frame in a specially constructed chamber with the intake louvers placed inside the chamber. This chamber is so constructed that pollen, dusts and other inhalants may be freely circulated in the air before the unit is started and the air is sucked through the unit to be tested. Greased slides were placed before the outlet louvers.

Pollen was then freely circulated for several minutes in the chamber by means of a fan. The unit was started and run for varying periods of time. Very few pollen particles were observed in these tests.

Dust was then admitted to the chamber and fresh slides were exposed. These slides showed many particles ranging in size up to 15 microns. These tests were made with fresh filters in the unit.

From the tests performed the Council concludes that the Dust-Stop Filter when used in the ILG unit AF-t is efficient for the removal of ragweed pollen from the air.

The Council voted to accept the Ilgairator unit AF-t, with the Dust-Stop Filter, for inclusion on its list of accepted devices.

SANBORN WATERLESS METABOLISM TESTER, 1941 MODEL, ACCEPTABLE

Manufacturer: Sanborn Company, 39 Osborn Street, Cambridge, Mass.

The Sanborn Waterless Metabolism Tester, 1941 Model, has essentially the same features as the Council accepted Sanborn Waterless Metabolism Tester,[1] differing slightly in the arrangement of some of its auxiliary parts. It is a compact, semiportable unit operating on 110-120, 60 cycle alternating current, and it may be readily wheeled from room to room. The unit proper is 18 inches high by 15 inches long by 10 inches wide, and when mounted on an optional stand its total height is 46 inches. The oxygen tank is carried in an upright position on the stand. Connecting the apparatus with the patient are tubes 27 inches long.

Examination of the apparatus by the Council disclosed the following results:

The recording device, whose accuracy depends on the current inflow, consists of a compact electrically driven kymograph 3⅜ inches in diameter carrying a special wax coated chart held rigidly in place by special clamps. The kymograph makes one complete revolution in ten minutes. The rulings on the chart are sufficiently accurate.

The oxygen in the rubber bellows is circulated by means of a motor driven fan which develops a positive pressure of 1.81 mm. water pressure on the mouthpiece. The motor is quiet. It heats according to the thermometer in the circulating chamber to the extent of 2.5 degrees in ten minutes and 7 degrees in twenty minutes. Circulation of the oxygen past the mouthpiece makes the breathing easy for the patient. A valve inserted in the air line makes it possible for the operator to connect the patient with room air or oxygen of the apparatus at will. The air inlet is large enough to accommodate regular breathing.

1. J. A. M. A. **112:** 2133 (May 27) 1939.

In the measurement of oxygen consumed, this metabolism tester is adapted to use two different methods: (1) the measurement of time necessary for the patient to consume a definite amount of oxygen, and (2) the measurement of the amount of oxygen consumed in a definite amount of time.

In the first, or short test, method a definite amount of oxygen, 1.25 liters, is put in the bellows and the patient breathes from this until that amount of oxygen is consumed. The time for this consumption is noted and the computation is made on that basis. Sufficient excess oxygen remains in the bellows at all times to insure the patient's comfort.

In the second, or long test, method the bellows is filled with a sufficient amount of oxygen for the patient to breathe for a definite length of time, which may be from six to ten minutes. The amount of oxygen is then computed from the fall of the bellows. This fall is calibrated in terms of volume of oxygen.

Computation of the patient's basal metabolism rate in both test methods may be made by means of a special slide rule furnished with the machine. This rule can be used only after the cubic centimeters of oxygen per minute have been determined. In the short test, measurements in cubic centimeters per minute may be read directly by means of a special scale found at the top of each sheet of the kymograph paper. This scale is logarithmic and calibrated to indicate cubic centimeters of oxygen per minute actually consumed by the patient.

In the long test, a special T type scale is furnished, from which the cubic centimeters per minute of actual oxygen consumption may also be read directly. It is calibrated in the same manner as the edge of the chart but is adjustable for corrections in temperature and barometric pressure as they exist when the test is being run.

Sanborn Waterless Metabolism Tester, 1941 Model

The accuracy of both the short and the long test depends on the accuracy of the calibrations of the T scale and of the scale on the edge of the chart. These scales were examined and found to be sufficiently accurate. It might also be noted here that owing to the instability of the T type scale slight variations in readings can be made by different manners of holding the scale on the chart. These amount to only ±1 per cent in the final result and may be considered sufficiently accurate.

The accuracy of the short test method depends on the accuracy with which oxygen is delivered to the bellows. This oxygen is measured in the apparatus by means of a small compression chamber connected with a gage and designed to measure exactly 1,250 cc. of oxygen at 760 mm. pressure and at 0 centigrade. A red hand on this gage varies with the change in pressure made by the temperature changes. By filling the gage to the mark of the movable hand, variations in temperature and pressure are supposed to be accounted for.

To test the accuracy of the chamber and the gage, a spirometer method was used. The amount of oxygen taken from the point at which it entered the bellows was measured. An average of four trials showed a total volume of 1,368.84 cc., which when corrected for standard conditions of temperature, pressure and moisture gave a total of 1,249.15 cc. of oxygen as the contents of the chamber. This is well within the limits of accuracy.

The ability of the system to hold gas was tested both with the patient valve shut and with the patient valve open but with the mouthpiece stoppered. Two tests of twenty-four hours each in a constant temperature showed no leakage of the machine either through the valve or through the tubes. Four tests of twenty-four hours each in a constant temperature and employing 950 Gm. of weight suspended on the bellows also showed no leakage either through the valve alone or through the tubing and other connections.

The Council voted to accept the Sanborn Waterless Metabolism Tester, 1941 Model, for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. THEODORE G. KLUMPP, M.D., Secretary.

HUMAN BLOOD PLASMA AND SERUM

Investigations of the biologic properties of blood serum and plasma commenced with the work of Bowditch [1] in 1871 in the laboratory of Carl Ludwig. In the many studies made since that time little distinction has been made between blood serum and blood plasma. In 1910 Moldovan [2] pointed out that strictly fresh blood serum is often very toxic and may produce intravascular clotting. This action is temporary and disappears in thirty minutes because of destruction of a fibrin ferment. This is followed by the appearance of vasopressor and depressor substances. It was shown by Stevens and Lee [3] in 1884 that the vasopressor substances appear in serum but not in plasma. This work was confirmed by Brodie [4] and O'Connor.[5] The vasopressor substance is not epinephrine, and since it is relatively resistant to destruction by heat (Schlayer,[6] Stewart and Harvey [7] and others) it is probably not a protein. It has been suggested that the pressor action is due to particulate matter in the serum (Eichholtz and Verney [8]). However, the fact that ergotoxin prevents the pressor effect (Heymans, Bouckaert and Moraes [9]) suggests that some other explanation is necessary for the pressor action. More serious from the point of view of transfusion is the presence of vasodepressor substances in both plasma and serum. Stewart and Harvey [7] studied one of these vasodepressor substances and found it to be a protein of the albumin type which seemed to act on the blood vessels, particularly of the kidney. Freund [10] suggested that one of the vasodepressor substances might be derived from the blood platelets. This substance was found by Zipf [11] and by Fiske [12] to be adenosine phosphoric acid.

While these vasotonins may disappear in part from the serum and plasma in twenty-four hours (Freund [10]), frequently they persist indefinitely (Bayliss and Ogden [13]). It is apparent from this discussion that vasotonins are more likely to be present in blood serum than in blood plasma.

EXPERIMENTAL SERUM AND PLASMA TRANSFUSIONS

Little distinction was made by the earlier workers between plasma and serum in experimental transfusion. The earliest transfusions with serum were made by Guthrie and Pike [14] in 1907 in experimental hemorrhage with good results. This was confirmed by Mann,[15] by Rossius [16] and by Kallius,[17] who also used blood serum for the replacement of whole blood after hemorrhage.

The first studies comparing the advantages and disadvantages of plasma and serum were those of Richet, Brodin and Saint-Girons.[18] These workers found that plasma was superior to serum in the treatment of experimental hemorrhage. Buttle and his co-workers [19] investigated the relative efficacy of whole blood, plasma and serum in hemorrhagic shock in animals. Whole blood was found to be most efficacious. Plasma transfusions in their experiments were superior to serum transfusions, since reactions were more frequent with serum and the rise of blood pressure was not as well maintained. Similarly Mahoney [20] obtained good results with plasma in the treatment of hemorrhagic and traumatic shock. On the other hand, serum has been found more effective in hemorrhage in animals (Levinson, Neuwelt and Necheles [21]), while other workers (Magladery, Solandt and Best,[22] Best and Solandt [23]) obtained equally good results with plasma and serum in experimental hemorrhage. Best and Solandt [23] believe that the transfusions should be administered very rapidly (50 to 100 cc. per minute) to be most effective.

Plasma and serum have been used to replace the proteins of the blood in hypoproteinemic conditions. Weech, Goettsch and Reeves [24] obtained satisfactory results with serum transfusions in animals suffering from edema and hypoproteinemia as a result of low protein diets. Subsequent investigators have utilized both plasma and serum in hypoproteinemia induced in lower animals by plasmapheresis.

CLINICAL PLASMA AND SERUM TRANSFUSIONS

In 1932 Kunz [25] transfused blood serum to patients suffering from acute blood loss and stated his belief that the results equaled those following whole blood transfusions. Filatov and Kartasevskij [26] administered by vein plasma obtained from group AB blood to patients suffering from continued bleeding. They found that such transfusions exerted a hemostatic effect. They also reported satisfactory results in patients suffering from acute loss of blood, from burns and from traumatic shock who were treated with plasma transfusions. They pointed out that the plasma could be conserved in a refrigerator for periods of ten to three hundred and thirty days before transfusions. Mild reactions (rigor and elevation of temperature) occurred in twenty-nine transfusions and severe reactions in five transfusions. While this is the earliest complete report on the use of plasma transfusion, it must be pointed out that others had reported its use previously (Payne and Steen,[27] Feissly,[28] Mairano and Teneff [29]).

Burceva [30] in 143 plasma transfusions, utilizing plasma conserved for periods of ten to one hundred and sixty-five days, noted reactions in 34 per cent of the patients. Heinatz and Sokolow [31] utilized plasma transfusion in patients suffering from hemolytic shock following blood transfusion.

In 1937 Alovski and Burceva [32] transfused plasma into 90 patients suffering from hemorrhage due to various gynecologic lesions. They noted post-transfusion reactions in 67.6 per cent of these patients. All of these workers used serum or plasma from universal donor blood or carried out preliminary cross matching tests with the blood of the prospective recipients.

Recently Tatum, Elliott and Nessett [33] suggested that blood plasma or serum could be transfused without preliminary typ-

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ing. Strumia, Wagner and Monaghan[34] in 1940 reported a series of plasma transfusions in which the plasma was not previously cross matched with the recipient's blood. They noted no post-transfusion reactions. According to Levinson and Cronheim[35] the agglutinins in the donor plasma or serum are neutralized by the recipient's blood and tissues, and they have suggested that the pooling of several serums or plasmas in a serum or plasma which has a lowered agglutinin titer. Post-transfusion reactions are conspicuous by their paucity in the latest reports on plasma and serum transfusions despite the absence of preliminary typing and cross matching of the fluids. This seems strange in view of the high incidence of reactions reported by the earlier workers. This reported low incidence of reactions may be due to improvement in the technic of collection and storage and, perhaps, a variation in the criteria of what constitutes a post-transfusion reaction.[36] The possible sources of transfusion reactions appear to be:

1. Bacterial contamination. Samples of serum and plasma have been found to be contaminated even after initial tests had apparently shown them to be sterile. An undetected contamination might readily account for reactions.

2. Particulate matter, e. g. portions of fibrin clot.

3. Denaturation of the proteins. This may occur from too rapid or excessive heating of the plasma or serum prior to transfusion.

4. High content of hemoglobin. The maximal quantity of free hemoglobin in solution should not exceed 25 mg. per hundred cubic centimeters of plasma or serum.

5. High content of potassium. This is due to a loss of potassium into the serum or plasma from the red blood cells (Drew, Edsall and Scudder[37]). Clegg and Dible[38] have noted that the potassium content of serum may rise to 38-40 mg. per hundred cubic centimeters (normal level being 16-20 mg. per hundred cubic centimeters). There is no evidence at present that such increases of potassium are the cause of transfusion reactions.

6. Allergy. Occasional reactions of an allergic nature, e. g. urticaria, have been reported (Clegg and Dible[38]).

7. Improper preservatives. Certain preservatives, e. g. phenol, may be the cause of reactions.

8. Incomplete inactivation of the group specific isoagglutinins of the plasma or serum by the body fluids or tissues of the recipient resulting in agglutination of the recipient's red blood cells (Davis[39]).

The results of human transfusions do not appear to have established the relative efficacy of human plasma and serum. Thus, some have obtained better clinical results with plasma (Strumia, Wagner and Monaghan,[34] Brennan,[40] Black[41]), others with serum (Hill, McMichael and Sharpey-Schafer,[42] Clegg and Dible[38]). Reactions have been noted more frequently after serum than after plasma transfusions (Ravdin, Stengel and Prushankin,[43] Aldrich, Stokes, Killingsworth and McGuinness[44]).

34. Strumia, M. M.; Wagner, J. A., and Monaghan, J. F.: Use of Citrated Plasma in Treatment of Secondary Shock, J. A. M. A. **114:** 1337 (April 6) 1940.

35. Levinson, S. O., and Cronheim, Anny: Suppression of Isoagglutinins and Significance of This Phenomenon in Serum Transfusions, J. A. M. A. **114:** 2097 (May 25) 1940.

36. Report of the Blood Transfusion Association, New York, Jan. 31, 1941.

37. Drew, C. R.; Edsall, K., and Scudder, J.: J. Lab. & Clin. Med. **25:** 240, 1939.

38. Clegg, J. W., and Dible, J. H.: Lancet **2:** 294, 1940.

39. Davis, H. A., to be published.

40. Brennan, H. J.: Brit. M. J. **1:** 1047, 1940.

41. Black, D. A. K.: Brit. M. J. **2:** 693, 1940.

42. Hill, D. K.; McMichael, J., and Sharpey-Schafer, E. P.: Lancet **2:** 774, 1940.

43. Ravdin, I. S.; Stengel, Alfred, Jr., and Prushankin, Mitchell: Control of Hypoproteinemia in Surgical Patients, J. A. M. A. **114:** 107 (Jan. 13) 1940.

44. Aldrich, C. H.; Stokes, Joseph, Jr.; Killingsworth, W. P., and McGuinness, A. C.: Concentrated Human Blood Serum as Diuretic in Treatment of Nephrosis: Preliminary Report, J. A. M. A. **111:** 129 (July 9) 1938.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M.D., Secretary.

NORMAL HUMAN SERUM AND NORMAL HUMAN PLASMA.—These are sterile preparations from the blood of human beings who, for six months prior to venesection, have been free, as far as can be determined, of diseases transmissible by blood transfusion. The blood is withdrawn under sterile technic and kept sterile throughout the entire process. Serologic tests for syphilis are carried out on the donors immediately before the blood is withdrawn, and sterility tests are subsequently made on each individual lot of bulk serum and plasma. If these tests are negative, individual lots are pooled and a preservative is added. The serum or plasma is then filtered through a bacteria-excluding filter and dispensed into suitable containers. The final product is tested for sterility according to the rules and regulations of the National Institute of Health.

Actions and Uses.—Normal human plasma and normal human serum are administered in the treatment of surgical and traumatic shock, in the treatment of burns when loss of available plasma occurs, to combat hypoproteinemia, and as a temporary substitute for whole blood in the treatment of hemorrhage when whole blood is not immediately available. Plasma and serum may be considered satisfactory substitutes for whole blood *except in those cases in which the administration of red blood corpuscles is regarded as essential.* The relative clinical efficacy of plasma and serum does not appear to have been determined, but reactions do seem to appear more frequently after serum than after plasma transfusions.

Sharp & Dohme, Inc., Philadelphia.

"Lyovac" Rapidly Lyophilized Normal Human Plasma.—A sterile preparation of desiccated plasma obtained from the fluid portion of fresh citrated human blood. The blood is separated from the corpuscles by centrifugation and subjected to a process of rapid freezing at very low temperature. Dehydration from the frozen state and preservation are accomplished under vacuum. It is claimed that the material may be administered without typing or cross matching and may be used up to five years after the date of manufacture. It is marketed in packages of one "vacule" ampoule-vials to yield 250 cc. of plasma when restored to its original volume by the accompanying ampoule of 250 cc. of pyrogen-free distilled water. Each package of plasma and water is accompanied by a separate package containing the equipment necessary for intravenous injection. The plasma contains as a preservative phenyl-mercuric nitrate 1: 25,000, and the distilled water contains the same preservative in the proportion of 1: 100,000.

Dosage.—"Lyovac" rapidly lyophilized normal human plasma, when restored to liquid form, is purported to have uses of ordinary human plasma and is administered intravenously. Amounts equivalent to those employed in the transfusion of whole blood have been suggested, but it should be remembered that 250 cc. of this preparation is, in plasma content, the approximate equivalent of 500 cc. of whole blood.

BILE SALTS-FAIRCHILD (See New and Nonofficial Remedies, 1941, p. 147).

The following dosage form has been accepted:

Capsules Bile Salts-Fairchild, 3 grains.

RIBOFLAVIN (See New and Nonofficial Remedies, 1941, p. 553).

The following dosage form has been accepted:

Tablets Riboflavin-Smith-Dorsey, 3 mg.
Prepared by Smith-Dorsey Co., Lincoln, Neb.

THIAMINE HYDROCHLORIDE-U. S. P. (See New and Nonofficial Remedies, 1941, p. 551).

The following dosage forms have been accepted:

Tablets Thiamine Hydrochloride-Smaco, 1 mg.: Each tablet contains 1 mg. of thiamine hydrochloride equivalent to 333 U. S. P. units.

Prepared by the S. M. A. Corporation, Cleveland.

Tablets Thiamine Hydrochloride-Smaco, 3 mg.: Each tablet contains 3 mg. of thiamine hydrochloride equivalent to 1,000 U. S. P. units.

Prepared by the S. M. A. Corporation, Cleveland.

Solution Thiamine Hydrochloride-Smaco, 3 mg. per cc., 1 cc. ampuls: Each cubic centimeter contains 3 mg. of thiamine hydrochloride, equivalent to 1,000 U. S. P. units, in sterile distilled water.

Prepared by the S. M. A. Corporation, Cleveland.

Solution Thiamine Hydrochloride-Smaco, 10 mg. per cc., 1 cc. ampuls: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, in sterile distilled water.

Prepared by the S. M. A. Corporation, Cleveland.

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SATURDAY, SEPTEMBER 13, 1941

ETIOLOGY OF ECLAMPSIA

The so-called anaphylactic theory of puerperal eclampsia, usually discredited, is now supported by Yamada [1] of the Gynecologic and Obstetric Institute, Imperial University, Kyoto. The Japanese gynecologist sensitized virgin female guinea pigs (250 Gm.) by the intra-abdominal injection of 0.5 cc. of heat inactivated serum from eclamptic patients, with control injections of noneclamptic pregnancy serum. Other groups of guinea pigs were given a single intra-abdominal injection of 2 cc. of 10 per cent aqueous suspension of dehydrated pulverized normal or eclamptic placentas. After an incubation period of two weeks the isolated uteri of these animals were tested by the Schultz-Dale technic. Yamada found that the isolated uterine musculature of guinea pigs sensitized to eclamptic serum is thrown into acute anaphylactic tetanus on the addition of 0.2 Gm. of eclamptic placental proteins; control tests with noneclamptic placental proteins gave negative results. Conversely, uteri sensitized to eclamptic placental proteins will react with human eclamptic serum but not with noneclamptic pregnancy serum. Both noneclamptic placenta and noneclamptic serum are nonantigenic by his technic.

Yamada concludes for such tests that the eclamptic placenta contains an abnormal protein which is highly antigenic and that puerperal eclampsia is a secondary allergic phenomenon, caused by a specific reaction between these perverted placental proteins and homologous maternal antibodies.

There seems to be nothing essentially new in this theory. A generation ago, Rosenau and Anderson found that guinea pigs could be sensitized to guinea pig placenta. Attempts to establish the implied anaphylactic theory of eclampsia, however, were unsuccessful, since the characteristic anatomy of puerperal eclampsia is never seen in experimental anaphylaxis. Yamada found, however, that characteristic eclamptic degeneration of the spleen, liver, kidneys and adrenal glands can be produced in pregnant rabbits by repeated intravenous injections of eclamptic placental proteins, control tests with noneclamptic placenta giving much less pronounced degenerative changes. In his opinion these exaggerated degenerative changes confirm his theory that an abnormal, highly antigenic protein is given off by the eclamptic placenta, reacting with homologous maternal antibodies in such a way as to account for the complete clinical picture of eclampsia.

Yamada's theory differs from the discredited theory of Rosenau and Anderson mainly in assuming a primary heterologization of placental proteins, eclampsia thus becoming a primary biochemical dysplasia of fetal tissues. Interest in this alleged placental perversion is heightened by the evidence recently reported by Levine and his co-workers,[2] which led them to believe that many cases of puerperal eclampsia are due to maternal isolysins formed against paternal Rh agglutinogens in fetal blood.

1. Yamada, K. I.: Effect of Visible Light on Biologic Reaction of Eclamptic Blood Serum and Eclamptic Placenta, Jap. J. Obst. & Gynec. **23**: 141 (June) 1940.

2. Levine, Philip; Katzin, E. M., and Burnham, Lyman: Isoimmunization in Pregnancy, J. A. M. A. **116**: 825 (March 1) 1941.

MALPRACTICE ACTIONS AGAINST ARMY MEDICAL OFFICERS AND EXAMINING PHYSICIANS FOR LOCAL SELECTIVE SERVICE BOARDS

A person in the military service may claim that an officer of the medical corps has in some manner been guilty of malpractice in treating or examining him in the line of duty. A similar claim for alleged malpractice may be pressed against an examining physician for a local Selective Service board by a selectee called before that board. The fact that a person is in the military service, or is in the course of being inducted therein, does not prevent him from asserting his civil rights as long as the interests of the service or of national defense are not concerned. Hence the Judge Advocate General of the Army has held, quite properly, that members of the Army are entitled to the same civil rights of action between one another with reference to suits for malpractice or negligence as they would have in civil life.[1] Without doubt the same degree of care, diligence and professional ability required of any physician with respect to the care of patients in civilian life is required by law of a medical officer of the Army or of an examining physician for a local board in his care or examination of a member of the service or of a selectee called for the purposes of induction. For a departure from such standards resulting in harm to the patient the medical officer or the examining physician would be liable in a civil suit by the aggrieved patient the same as though both the patient and the physician were in civil life. The medical officer, then, in the Army and the physician acting for a local Selective Service board by virtue of his service or function stands in no different position with respect to answer-

1. J. A. G. 707, March 6, 1934.

ability to his patients from that of a physician acting solely in a civil capacity.

However, were a malpractice claim to be pressed against an army medical officer or an examining physician for a local board for alleged malpractice in the performance of his official duties the government itself would no doubt provide defense for the physician accused. It has been the practice of the Attorney General in the past to provide, on the request of an interested government department or agency, defense for government officers or agents in civil suits arising out of the activities in the course of the discharge of their official duties. A communication from the office of the Judge Advocate General of the Army dated May 1, 1941 indicates that in the past the War Department itself has not undertaken the defense of a civil suit for malpractice brought against a member of the medical corps but that the defendant medical officer has had the right to have the case removed to a federal court and to be defended by a United States attorney designated by the Department of Justice. If, however, according to this communication, a judgment was to be rendered against such a medical officer, there is no provision by law by which the judgment could be paid by the government or by which the defendant physician could be reimbursed by the government.

Similar defense in all probability would be available to a physician examining for a local Selective Service board, accused of malpractice in connection with his duties for the local board. If such a suit is filed, a communication from the Selective Service system states:

> The National Selective Service System will act as follows:
>
> 1. Request the Attorney General to instruct the United States District Attorney to appear on behalf of the United States government or to assign a special representative of the Attorney General's office to the case.
>
> 2. Supply expert medical testimony from our own staff.
>
> 3. Request outstanding experts to testify without expense to the individual being sued.
>
> 4. Cooperate in a reexamination of the registrant if such is deemed desirable.
>
> 5. Do anything else which is within our power to assist in a thorough and complete presentation in the case in order to make certain that no unjustified claim shall succeed and,
>
> 6. If a judgment is secured, present a bill to Congress and recommend its adoption, looking toward the paying of the judgment by the United States government.

While the defense measures indicated that will be available to medical officers and examining physicians for local boards will undoubtedly be helpful, physicians concerned cannot safely discontinue such forms of malpractice insurance protection as they previously have carried. In the communication previously referred to, the Judge Advocate General's office states that malpractice suits by persons in military service against members of the medical corps have thus far been quite rare. Therefore, since patriotic cooperation may be expected from all persons and corporations during the national emergency, especially favorable premium rates should be obtainable from insurance companies for policies to protect physicians in the service and local board physicians against claims for malpractice that may rise from the performance of their duties to the service and to the national government.

VITAMIN C AND AMINO ACID METABOLISM

The elucidation of some of the roles which vitamins may assume in the utilization and metabolism of certain cellular metabolites has aided in a clearer understanding of the need for these dietary accessories for normal health and well being. The functioning of vitamin B_1 as a coenzyme for carboxylase, and the presence of riboflavin and nicotinic acid as integral parts of certain cellular enzymes concerned with biologic oxidations, have intimately related these vitamins to essential cell processes. This evidence answers the perplexing problem of how a dietary essential functions and explains why it is an essential substance which must be supplied in optimal amounts in the food. Although the biochemist may point with pride to his explanations of the mode of participation of certain of the B vitamins in metabolic processes, it is still necessary to continue the search for patterns of body reactions into which the other vitamins will fit. However, recent studies have implicated ascorbic acid directly in processes of metabolic importance, notably those concerned with the metabolism of the aromatic amino acids phenylalanine and tyrosine.

A definite relationship between vitamin C and tyrosine and phenylalanine metabolism has recently been described by Levine and his colleagues.[1] These Cornell University Medical College investigators observed that premature infants receiving diets of relatively high protein content (5 Gm. or more per kilogram daily) exhibit a spontaneous defect in their metabolism of tyrosine and phenylalanine. The defect was manifested by the excretion of parahydroxyphenyllactic and parahydroxyphenylpyruvic acids in the urine; the excretion of these compounds was accentuated by the administration of either tyrosine or phenylalanine. This particular aberration in the metabolism of these amino acids differs from other types of experimental and clinical conditions in which they have been implicated in that more of the hydroxyphenyllactic acid is excreted than of the corresponding keto acid. Homogentisic acid was not present in the urines of the infants studied. Furthermore, although full term infants fed similar diets showed no spontaneous abnormality in the metabolism of the aromatic amino acids, the defect was precipitated by the ingestion of a single dose of 1 Gm. per kilogram of phenylalanine by one infant and of tyrosine by another.

1. Levine, S. Z.; Marples, Eleanor, and Gordon, H. H.: J. Clin. Investigation **20**: 199 (March) 1941. Levine, S. Z.; Gordon, H. H., and Marples, Eleanor, ibid., p. 209.

As the premature infants had been fed diets of vitamin C free cow's milk, the effect of this vitamin on the metabolic picture was studied. The parenteral or oral administration to 9 infants of vitamin C in single or divided doses totaling 100 to 500 mg. resulted without exception in the prompt disappearance of abnormal metabolites from the urine. Similarly, vitamin C prophylaxis abolished the urinary excretion of these metabolism products by full term infants given large single doses of phenylalanine or tyrosine. Moreover, the reappearance of the hydroxy and keto acids in the urine was observed in 2 infants following withdrawal of vitamin C, and resumption of the vitamin therapy again caused disappearance of these acids from the urine. The reversibility of this condition differentiates it from the hereditary anomalies alkaptonuria and phenylpyruvic oligophrenia, both of which are claimed to be unaffected by vitamin C administration.[1]

These interesting observations strongly suggest an important role for vitamin C in the metabolism of the aromatic amino acids in the growing child. The metabolic defect, either spontaneous or induced, existing because of a low supply of this vitamin may be of value in the early detection of vitamin C deficiency in premature and young infants. The immediate correction of the metabolic error, following vitamin C administration, occurred in the absence of any appreciable rise in the ascorbic acid level of the plasma, thus lending further importance to the possible clinical value of the observations in detecting incipient vitamin C deficiency. In addition to establishing a definite role for vitamin C in the metabolism of aromatic amino acids, the data reported suggest other problems whose solution should be of value to physiology and clinical medicine.

Current Comment

PREFERENCE RATING FOR RESEARCH SUPPLIES AND EQUIPMENT

The great importance of scientific research to the defense program has just been recognized by granting a high defense priority rating to equipment needed by research laboratories. The Director of Priorities, E. R. Stettinius Jr., signed an order which became effective August 30 and remains effective until Feb. 28, 1942, granting the priority rating of A-2 to such equipment. There are in the United States some two thousand research laboratories which use small quantities of about five thousand chemicals and require in their work twenty-five thousand different instruments. Any laboratory having difficulty in securing essential materials for scientific research and wishing to qualify for the A-2 rating should apply to the Office of Production Management, Chemical Branch, Washington, D. C., on form PD-88. In its application the laboratory must state the type of service rendered or products manufactured. The Office of Production Management has entered into an agreement with the National Academy of Sciences whereby the Division of Priorities will have the benefit of the advice of the academy with respect to all applications received. When a laboratory files an application, it should state the number of copies of the order it desires so that it may apply the rating to deliveries to it by its suppliers if necessary and enable its suppliers in turn to apply the rating to deliveries to them by their subsuppliers. Each order issued to a laboratory will bear a serial number assigned by the Division of Priorities. If a laboratory is unable to obtain some essential material even with the A-2 rating, it should file an application with the Priorities Division on form PD-1; then, provided the research product is considered sufficiently important, the Priorities Division will issue an individual preference rating certificate, assigning a higher rating to a particular delivery of specified material. Further details concerning this matter may be obtained from the Priorities Division of the Office of Production Management.

PAUL V. McNUTT BECOMES DIRECTOR OF HEALTH, WELFARE AND RELATED ACTIVITIES

Under the heading of Medical Preparedness in this issue of THE JOURNAL appears an executive order, signed by the President of the United States last week, by which Mr. Paul V. McNutt, who has been Coordinator for Health, Welfare and Allied Activities, is made director of a similar agency now established in the Office of Emergency Management. This change is important from the point of view of organization and coordination of the work undertaken. Careful reading of the executive order indicates that an attempt will be made to secure coordination of medical affairs, including both governmental and private agencies. The director is authorized, moreover, to appoint representatives of various private agencies on the committees which will take the responsibility for study and advice on various problems concerned with the national defense. Incidentally, the Health and Medical Committee (of which Dr. Irvin Abell is chairman) is continued as a part of the office of the director; however, the director of the Division of Medical Sciences of the National Research Council, Dr. Lewis H. Weed, is replaced by the chairman of the Committee on Medical Research and Development, Dr. A. Newton Richards. Members of the agency which Mr. McNutt will direct, it will be observed, work entirely without compensation in addition to any other positions they may hold, but funds are provided for maintenance and necessary expenses incidental to the conduct of the work. No doubt the new arrangement moves a step further, at least so far as relates to the national emergency, in coordinating all the medical aspects of medicine and health of the government except those of the Army and Navy, under a single directing hand.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

OFFICE OF DEFENSE HEALTH AND WELFARE SERVICES IN THE EXECUTIVE OFFICE OF THE PRESIDENT

MR. PAUL V. McNUTT APPOINTED DIRECTOR

Following is an executive order promulgated by the President, Sept. 3, 1941:

By virtue of the authority vested in me by the Constitution and statutes of the United States, and in order define further the functions and duties of the Office for Emergency Management of the Executive Office of the President with respect to the national emergency as declared by the President on May 27, 1941 for the purpose of assuring adequate health and welfare services to meet needs of the national defense program, it is hereby ordered:

1. The term "health and welfare services" as used in this Order means all health, welfare, medical, nutrition, recreation, and related services including those aspects of education under the jurisdiction of the Federal Security Agency.

2. There is established within the Office for Emergency Management of the Executive Office of the President the Office of Defense Health and Welfare Services, at the head of which the Federal Security Administrator shall serve as Director. The director shall discharge and perform his responsibilities and duties under the direction and supervision of the President. The Director shall receive no salary or other remuneration as such, but shall be entitled to actual and necessary transportation, subsistence, and other expenses incidental to the performance of his duties.

3. Subject to such policies, regulations, and directions as the President may from time to time prescribe, the Office shall:

a. Serve as the center for the coordination of health and welfare services made available by the departments and agencies of the Federal Government, and other agencies public and private, to meet the needs of State and local communities arising from the defense program; and take necessary steps to secure the cooperation of the appropriate Federal departments and agencies relative thereto.

b. Make available to States and localities, upon request, the services of specialists in health and welfare activities to assist in the planning and execution of such local and State programs.

c. Study, plan, and encourage measures designed to assure the provision of adequate defense health and welfare services to the citizens of the Nation during the period of the emergency, and coordinate studies and surveys made by Federal departments and agencies with respect to these fields.

d. Keep the President informed with respect to progress made in carrying out this Order; and perform such related duties as the President may from time to time assign or delegate to it.

4. The Director may provide for the internal organization and management of the Office of Defense Health and Welfare Services. He shall obtain the President's approval for the establishment of the principal subdivisions of the Office and the appointment of the heads thereof.

5. In the study of problems and in the discharge of its functions and responsibilities it shall be the policy of the Office of Defense Health and Welfare Services to collaborate with and to utilize, in so far as practicable, the facilities and services of existing departments and agencies which perform related functions. Futhermore, it shall be the policy of the Office of Defense Health and Welfare Services in carrying out its functions and duties to work with and through the State and local defense councils and other appropriate State and local agencies, and in this connection to cooperate and work in conjunction with the Office of Civilian Defense in its relationships with State and local groups.

6. There shall be in the Office of Defense Health and Welfare Services a Health and Medical Committee to consist of a Chairman to be appointed by the President, the Surgeon General of the Army, the Surgeon General of the Navy, the Surgeon General of the United States Public Health Service, the Chairman of the Committee on Medical Research of the Office of Scientific Research and Development, and such others as the President may from time to time determine. The Committee shall advise the Director regarding the health and medical aspects of national defense exclusive of medical research and assist in the coordination of health and medical activities affecting national defense. The members of the Committee shall serve as such without compensation but shall be entitled to actual and necessary transportation, subsistence and other expenses incidental to the performance of their duties.

7. The Director is authorized to appoint such advisory committees and subcommittees, with respect to particular aspects of health, welfare, nutrition, recreation, and related activities as he may find necessary or desirable to assist him in the performance of his duties. Such advisory committees may include representatives from Federal departments and agencies, State and local governments, private organizations and the public at large. The members of advisory committees shall serve as such without compensation, but shall be entitled to actual and necessary transportation, subsistence, and other expenses incidental to the performance of their duties.

8. Within the limits of such funds as may be appropriated or allocated to the Office of Defense Health and Welfare Services by the President, the Director may employ necessary personnel and make provision for the necessary supplies, facilities, and services through the Federal Security Agency. The Office of Defense Health and Welfare Services may use such statistical, informational, fiscal, personnel, and other general business services and facilities as may be made available through the Office for Emergency Management.

FRANKLIN D. ROOSEVELT.

THE WHITE HOUSE,
September 3, 1941.

PROVISION OF ADEQUATE LABORATORY SERVICES IN MILITARY HOSPITALS

Abstract of Circular Letter Issued by the Office of the Surgeon General of the United States Army

The entire structure of modern medicine and the accuracy which has been attained in the diagnosis, treatment and prevention of disease are based on a solid foundation of facts established through careful fundamental studies made in the various basic laboratory sciences. Moreover, the degree of efficiency to be expected in the routine practice of scientific medicine today—whether in the care of the sick or in the control of disease, either in civilian or in military populations—depends primarily on the adequacy of the laboratory personnel and facilities available. The Medical Department has always appreciated the importance of affording to the Army the best

laboratory services obtainable. However, during the present emergency the rapid expansion of all Medical Department activities and the lack of trained reserve personnel have resulted in some delay in the development of adequate laboratory services in certain army hospitals.

SURVEY OF PRESENT DIAGNOSTIC LABORATORY SERVICES

In order to provide more satisfactory diagnostic laboratory services throughout the Army, it is desired that the commanding officer of each hospital and dispensary make a careful study to determine the adequacy of the diagnostic laboratory personnel, housing, equipment and supplies now provided for his command, with a view to taking whatever steps may be necessary to develop a satisfactory service. The adequacy of the present service should be determined on a functional basis, and this will depend primarily on the number of patients to be served. However, in certain localities this fundamental criterion may require modification because of such special factors as geographic isolation, inadequate transportation facilities or the existence of special disease problems. On completion of the study, a detailed report of the status of the laboratory service should be prepared, following the attached general outline, and this report should be forwarded without delay through medical channels to this office.

CRITERIA TO BE CONSIDERED IN SURVEY

The following remarks on the functions, personnel, organization, housing, equipment and supplies will serve to indicate the general policy to be followed. It is realized, however, that in individual cases local conditions may necessitate a change in this general plan.

Functions.—It is the desire of this office that every hospital and dispensary in the Army be provided with a modern diagnostic laboratory service which is adequately staffed and equipped to perform efficiently all the procedures required for the accurate diagnosis and treatment of the sick. Owing to necessary limitations in personnel and equipment, smaller institutions are expected to utilize larger hospital or corps area laboratories in their vicinity for the performance of the more complicated laboratory procedures. Precipitin tests for syphilis (Kahn) will be done in laboratories of all army hospitals of one hundred and fifty or more beds. Wassermann and colloidal gold tests will be performed, when indicated, in general hospitals, in station hospitals of one thousand or more beds and in corps area laboratories (S. G. O. Circular Letter 10, dated Feb. 13, 1941). Histopathologic examinations of tissue will be done in general hospitals and station hospitals with one thousand or more beds. In addition to these facilities for the diagnosis of histopathologic specimens of tissue in larger hospitals, a consultative service is available at the Army Medical Museum for the study of such specimens in which further confirmation of diagnosis is desired (see paragraph 24, S. G. O. Circular Letter 1, dated Jan. 2, 1941). Similar services in connection with other types of laboratory examinations are available at corps area laboratories and the Army Medical School.

Personnel.—Sufficient carefully trained laboratory officers and enlisted or civilian technicians should be assigned to perform all the diagnostic procedures indicated for the respective medical installations.

COMMISSIONED OFFICERS

In every instance the chief of the laboratory service must be an officer of the Medical Corps with general laboratory training and experience. However, his assistants may be officers either of the Medical, Sanitary or other corps of the Medical Department, provided only fully qualified individuals with the necessary specialized knowledge are selected for such duty. In the event that well qualified commissioned personnel are not available locally, additional reserve officers qualified for assignment to laboratories as clinical pathologists and protozoologists, bacteriologists, chemists, serologists and histopathologists, respectively, should be obtained by formal request for such personnel through the proper military channels.

ENLISTED TECHNICIANS

If enlisted men of suitable training and grade are not available locally, they should be obtained by formal request through the proper military channels or by sending members of the local detachment to the army training schools for laboratory technicians (letter W. D., A. G. O., Subject: Orders. File A. G. 220.63 [5-21-41] E. A., dated May 28, 1941; and S. G. O. Circular Letter 14, dated Feb. 26, 1941).

CIVILIAN TECHNICIANS

When authorized, well qualified trained civilian laboratory technicians should be employed in hospital and dispensary laboratories to supplement the work of army personnel.

Housing.—Sufficient space should be allotted to dispensary and hospital laboratories for the performance of the various types of laboratory work, the storage of supplies, the housing of animals and the maintenance of records. A single large room assigned exclusively to the laboratory service may suffice in dispensaries and hospitals with less than one hundred and fifty beds that normally do only clinical pathologic examinations and the collection and forwarding of specimens for the more complicated laboratory procedures. However, larger hospitals require additional space for work rooms and offices in order that the various laboratory specialties may be handled efficiently. It is realized that the space now provided at some hospitals is inadequate for the proper functioning of the laboratory, and, where local administrative changes cannot provide the additional room needed, specific recommendations should be made for the improvement of each local situation.

Equipment and Supplies.—The equipment and supplies required for the laboratories of dispensaries and hospitals will depend on the nature and amounts of the work to be performed. If the equipment and supplies now on hand are not adequate for local needs, immediate steps should be taken to advise the Surgeon General of additional items required. In the interests of economy it is advisable to standardize recognized laboratory procedures as far as possible and to utilize standard items as listed in the Medical Department supply catalogue for the performance of these procedures. However, if these items are not adequate, additional nonstandard items should be provided as needed.

MEDICAL OFFICERS ASSIGNED TO PARACHUTE BATTALIONS

Two medical officers and fifteen medical department enlisted men, all qualified parachutists, have been assigned to each of the new infantry parachute battalions in training at Fort Benning, Ga. The medical personnel was selected for high standard of physical ability and professional attainments from a list of volunteers. Additional medical personnel is now being selected to serve with the newly organized 503d Parachute Battalion. In maneuvers and in battle this medical personnel will accompany parachute troops when they jump from airplanes and will set up aid stations to handle casualties until they can be evacuated to hospitals. Special medical equipment, which can be dropped by parachutes, has been designed for the medical detachment.

RED CROSS BUILDINGS FOR ARMY POSTS

The War Department announced on August 25 approval of plans by the American Red Cross to construct office and headquarters buildings at sixty-two Army posts, all costs of construction and appurtenant utilities and of operation and maintenance to be paid by the Red Cross. The construction is expected to cost about $1,250,000. The buildings will conform generally to local types of architecture, some to be of wood, along Colonial lines, some in Mission style, others of brick construction. Plans provide for several sizes of buildings to conform with the dimensions of available building sites. Army officers in the corps areas will act in an advisory capacity in designating appropriate locations. Zone constructing quartermasters and district engineers are to furnish technical advice

in coordinating these buildings with other camp construction. The structures are designed to contain offices in one wing, living quarters for Red Cross personnel in an opposite wing and lecture rooms and reception rooms in the center.

DOCTORS FOR BRITAIN

By the week ended September 4, a total of 230 applications had been received from physicians wishing to enroll with the Royal Army Medical Corps. Of these, 138 had been found unqualified because of age, lack of citizenship or other similar reasons. Ninety-two have been qualified and 42 have been given passports to Great Britain; the remaining 50 are in process.

CANDY ADDED TO SOLDIERS' CANNED RATIONS

The Army has made a change in its type C canned field rations. The ounce of chocolate has now been replaced by five pieces of hard candy, individually wrapped and in assorted flavors. The substitution is based on results of recent tests on fatigue conducted at the University of Minnesota, which prove that a soldier has more energy output if sugar is consumed periodically throughout the day rather than in large quantities at mealtime. The candies are issued on the theory that they will not be eaten at mealtime but will be consumed from time to time during long marches.

MILITARY MEDICAL ASSOCIATION AT FORT KNOX

Medical officers of the Armored Force and other medical officers at Fort Knox, Kentucky, have formed an organization known as the Armored Force and Fort Knox Military Medical Association, for the purpose of disseminating tactical information gained by officers of the Armored Force, and professional information gained by those concerned with strictly professional duties, and to familiarize all concerned with activities of sanitary inspection and medical problems of modern warfare. Col. Robert H. Duenner, M. C., Armored Force, was elected president of the association. The regular meetings, which are held at the Officers' Club at Fort Knox the second Tuesday of each month, have been attended by more than one hundred officers. At the June 17 meeting Major M. C. Thomas, M. C., read a paper on "Epidemics and Hospitalization"; at the July 29 meeting Major L. H. Ginn, M. C., Commander of the 47th Medical Battalion, spoke on "Medical Service of the Armored Division," and at the August 12 meeting Lieut.-Col. N. M. Neate, V. C., gave an illustrated talk on food inspection. At the last meeting Major Gen. Jacob L. Devers, Commander of the Armored Force, was a guest of honor.

ABOUT FIFTEEN TRAINEES IN EACH THOUSAND ARE REJECTED

The results of a study of the causes for rejecting 36,800 out of 243,955 men who were examined for military training by induction boards throughout the nation during March and April were announced September 2, by the War Department. The study shows that the principal causes of rejection were defective eyes, teeth, and mental and nervous disorders. The Surgeon General's study, which was based on weekly reports from induction boards during the two month period, shows that 15.07 per thousand men were rejected during March and April. A previous study of reports on examinations for all trainees prior to March showed that 15.4 per thousand were rejected. No effort was made to classify the trainees, for the purpose of the study, into age groups. The accompanying table offers a percental comparison of the principal causes of rejection.

Principal Causes of Rejection

Cause	Prior to February 10	March and April
Eye	13.34	11.27
Ear, nose, throat	9.52	8.71
Teeth	19.42	13.15
Hernia	5.26	3.90
Feet	3.64	2.15
Musculoskeletal	4.10	5.89
Cardiovascular	6.18	7.88
Lung	4.99	6.16
Nervous and mental	10.47	16.42
Other	23.08	24.47
Total	100.00%	100.00%

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

AKRE, Osmund Harald, 1st Lieut., Clarkfield, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.

ALLIBAND, George Thomas, 1st Lieut., Omaha, Air Corps Station (nonflying status), Fort Douglas, Utah.

ALLISON, Lester Fischer, Captain, Greybull, Wyo., Air Base (nonflying status), Fresno, Calif.

AMBRUSKO, John Stephen, 1st Lieut., Rochester, Minn., Basic Flying School (nonflying status), Taft, Calif.

AYERS, LeRoy Judson, 1st Lieut., Omaha, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.

BACA, Donaciano Encarnacion, 1st Lieut., Papillion, Neb., Corps Area Service Command Station Hospital, Fort Riley, Kan.

BEAL, Raymond Jameson, 1st Lieut., Fredonia, Kan., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.

BEARE, John Byron, 1st Lieut., Rochester, Minn., Advanced Flying School (nonflying status), Mather Field, Calif.

BELZER, Meyer Simon, Major, Minneapolis, 6th Infantry Division, Fort Leonard Wood, Mo.

BODEN, Herbert Neil, 1st Lieut., Truro, Iowa, Air Base (nonflying status), Fresno, Calif.

BOYD, Arthur Montgomery, 1st Lieut., St. Louis, Air Base (nonflying status), Fresno, Calif.

BOYSEN, John Edward, 1st Lieut., Pelican Rapids, Minn., Air Base (nonflying status), Fresno, Calif.

BROWNSON, Bradley Claude, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.

BUNTING, Williston Penfield, 1st Lieut., Kansas City, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.

BURGESS, Roy Earle, 1st Lieut., Gettysburg, S. D., Air Base (nonflying status), Fresno, Calif.

BURKS, James Willis, Jr., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.

BURNHAM, Wesley Howard, 1st Lieut., Minneapolis, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.

CAIN, James Clarence, 1st Lieut., Rochester, Minn., Air Corps Gunnery School (nonflying status), Las Vegas, Nev.

CARTER, Claud E., Captain, St. Louis, 35th Infantry Division, Camp J. T. Robinson, Ark.

CATINELLA, Paul Joseph, 1st Lieut., Rochester, Minn., Basic Flying School (nonflying status), Taft, Calif.

CHLAD, Arnold Joseph, 1st Lieut., St. Paul, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.

CLINE, Edward Wilburn, 1st Lieut., Platte City, Mo., 35th Infantry Division, Camp J. T. Robinson, Ark.

COHN, Mortimer Monty, 1st Lieut., Cheyenne Agency, S. D., Air Base (nonflying status), Fresno, Calif.

CRELLIN, Henry Graham, 1st Lieut., Lyons, Neb., Air Corps Station (nonflying status), Moffett Field, Calif.

CROWLEY, Daniel Francis, Jr., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.

DALTON, Arthur Rex, 1st Lieut., St. Louis, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.

DAVIS, Edward Valentine, Captain, Kirksville, Mo., 2d Medical Battalion, Fort Sam Houston, Texas.

DIXON, John Rex, 1st Lieut., Linneus, Mo., Advanced Flying School, Ellington Field, Houston, Texas.

DUIMSTRA, Fred, 1st Lieut., Sioux Falls, S. D., Advanced Flying School (nonflying status), Mather Field, Calif.

EAST, JOHN PRATHER, 1st Lieut., Northome, Minn., Advanced Flying School, Ellington Field, Houston, Texas.

ELDERS, John Byron, 1st Lieut., Walnut Ridge, Ark., 2d Cavalry Division, Fort Riley, Kan.

ELLIS, Fred Arthur, 1st Lieut., St. Louis, Advanced Flying School (nonflying status), Mather Field, Calif.

FREEDMAN, Harold Charles, 1st Lieut., Minneapolis, Basic Flying School (nonflying status), Taft, Calif.

FRIED, David Daniel, 1st Lieut., Bigfork, Ark., Air Corps Gunnery School, nonflying status, Las Vegas, Nev.
GACUSANA, Jose Miranda, 1st Lieut., Sharon, Kan., Air Corps Gunnery School, nonflying status, Las Vegas, Nev.
GANLEY, William Coyle, 1st Lieut., Kansas City, Mo., Advanced Flying School (nonflying status), Mather Field, Calif.
GEISSLER, Gerald, 1st Lieut., Hinckley, Minn., Air Base (nonflying status), Pendleton, Ore.
GJERDE, William Feder, 1st Lieut., St. Paul, Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
GRACE, Jesse Kent, 1st Lieut., Belleville, Ark., Air Base (nonflying status), Boise, Ida.
GRANT, Russell B., 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort F. E. Warren, Wyo.
GRINDELL, George Alfred, 1st Lieut., St. Louis, Air Corps Station (nonflying status), Mather Field, Calif.
GROSSMAN, Milton David, 1st Lieut., Sioux City, Iowa, Basic Flying School (nonflying status), Taft, Calif.
HAIGLER, Frederick Hemmann, 1st Lieut., Cherokee, Kan., Air Base (nonflying status), Boise, Ida.
HAIGLER, Samuel Hartley, Jr., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
HAMILTON, Eugene H., 1st Lieut., Hannibal, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
HAW, Marvin Tinsley, Jr., Captain, Bonne Terre, Mo., Air Base (nonflying status), Fresno, Calif.
HAWORTH, Kenneth Walden, Captain, Pratt, Kan., 2d Medical Battalion, Fort Sam Houston, Texas.
HERVERT, William James, 1st Lieut., Valparaiso, Neb., Air Base (nonflying status), Boise, Ida.
HILL, John Roger, 1st Lieut., Rochester, Minn., Air Corps Gunnery School, nonflying status, Las Vegas, Nev.
HODGSON, Frank Harrison, 1st Lieut., Kansas City, Mo., Engineer Replacement Training Center Infirmary, Fort Leonard Wood, Mo.
HOLLO, Vencel William, 1st Lieut., St. Louis, Basic Flying School (nonflying status), Taft, Calif.
HOLLWEG, Kenneth Charles, 1st Lieut., Kansas City, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
HONICH, Nicholas Joseph, 1st Lieut., O'Fallon, Mo., Air Base (nonflying status), Boise, Ida.
HOPSON, George, 1st Lieut., Rosebud, S. D., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
HOSPODARSKY, Leonard John, Captain, Ridgeway, Iowa, Air Base (nonflying status), Boise, Ida.
HOWE, Rulon Fullmer, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
JACOBUS, Marcus Ryland, 1st Lieut., Letcher, S. D., Basic Flying School (nonflying status), Taft, Calif.
JOHNSON, Clive Roland, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
JOHNSTON, William Wathen, 1st Lieut., Helena, Ark., 2d Cavalry Division, Fort Riley, Kan.
JONES, Lynwood Beasley, 1st Lieut., Monticello, Ark., 35th Infantry Division, Camp J. T. Robinson, Ark.
JORDAN, Ralph Ensign, 1st Lieut., Beloit, Kan., Air Corps Station (nonflying status), Moffett Field, Calif.
KAYLOR, Coy Clifton, 1st Lieut., Fargo, N. D., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
KEELER, James Edward, 1st Lieut., Kansas City, Mo., Air Corps Station (nonflying status), Fort Douglas, Utah.
KEELEY, James Kenneth, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
KELSEY, Mavis Parrott, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Portland, Ore.
KIESAU, Kenneth Rudolph, 1st Lieut., Waukon, Iowa, Engineer Replacement Training Center Infirmary, Fort Leonard Wood, Mo.
KILLINS, Jack Adrian, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Portland, Ore.
KIRCHER, Theodor Englemann, Jr., 1st Lieut., Brentwood, Mo., Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
KOEHNE, Frederick Dee, 1st Lieut., Oakland, Iowa, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
LAWSON, Mason Glynn, 1st Lieut., Texarkana, Ark., 2d Cavalry Division, Fort Riley, Kan.
LEWIS, Leland Stanford, 1st Lieut., Garrison, Iowa, Air Base (nonflying status), Boise, Ida.
LINDAHL, Wallace William, 1st Lieut., Rochester, Minn., Advanced Flying School (nonflying status), Mather Field, Calif.
LONGWELL, Freeman Harris, 1st Lieut., Iowa City, 6th Engineer Battalion, Fort Leonard Wood, Mo.
LYMAN, Richard Watson, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
MAGUIRE, Frank Carroll, Jr., 1st Lieut., Blytheville, Ark., 2d Cavalry Division, Fort Riley, Kan.
MAXWELL, Reuben Jordan, 1st Lieut., St. Louis, Air Base, nonflying status, Portland, Ore.
MAXWELL, Robert Hayden, 1st Lieut., Wichita, Kan., Basic Flying School (nonflying status), Taft, Calif.
McCURDY, Robert George, 1st Lieut., Bismarck, N. D., Basic Flying School (nonflying status), Taft, Calif.
McELHINNEY, William Thomas, 1st Lieut., Iowa City, Air Base, nonflying status, Portland, Ore.
MELTON, Thomas June, Jr., 1st Lieut., Fort Smith, Ark., 2d Cavalry Division, Fort Riley, Kan.
MILDER, Benjamin, 1st Lieut., University City, Mo., Air Corps Station (nonflying status), Moffett Field, Calif.
MODELEVSKY, Aaron, Captain, Jonesboro, Ark., 2d Cavalry Division, Fort Riley, Kan.
MOOS, Daniel James, 1st Lieut., Minneapolis, Air Corps Station (nonflying status), Fort Douglas, Utah.
MOULTON, Everett Crockett, Jr., 1st Lieut., Evanston, Ill., 4th Cavalry, Fort Meade, S. D.
MULMED, Earl I., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
NIEMEYER, Arnold Carl, 1st Lieut., Omaha, Corps Area Service Command, Replacement Center Infirmary, Fort F. E. Warren, Wyo.
NOLAN, Bernard Patrick, 1st Lieut., Pine Ridge, S. D., 2d Cavalry Division, Fort Riley, Kan.
NORD, Donald Harold, 1st Lieut., Huxley, Iowa, Air Base (nonflying status), Pendleton, Ore.
PEARSON, Clarence Coplyn, Captain, Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
PEGGS, Harold Jared, 1st Lieut., Des Moines, Iowa, Air Base (nonflying status), Fresno, Calif.
PETERS, Claude Frederick, 1st Lieut., Benton, Ark., 2d Cavalry Division, Fort Riley, Kan.
PETERS, Gustavus Alfred, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Portland, Ore.
PRESSMAN, Abraham, 1st Lieut., Belcourt, N. D., 2d Cavalry Division, Fort Riley, Kan.
PROTHRO, Winston Boone, 1st Lieut., Arkadelphia, Ark., 2d Cavalry Division, Fort Riley, Kan.
PULLIAM, Robert Lee, Jr., 1st Lieut., Iowa City, Air Base, nonflying status, Portland, Ore.
RANDALL, Ross George, 1st Lieut., Iowa City, Air Base, nonflying status, Everett, Wash.
RICHARDSON, Robert Joseph, 1st Lieut., Rushford, Minn., 6th Medical Battalion, Fort Leonard Wood, Mo.
ROBINSON, Leo Davis, 1st Lieut., Iola, Kan., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
ROBINSON, Robert Roy, Jr., 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
ROSENBAUM, Edward E., 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Snelling, Minn.
SAXVIK, Russell Oliver, 1st Lieut., Bismarck, N. D., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
SCHILLA, Fredrick William, Jr., 1st Lieut., St. Paul, Camp Grant, Ill.
SCUKA, Clayton Leon, 1st Lieut., Wichita, Kan., 6th Medical Battalion, Fort Leonard Wood, Mo.
SELLS, Robert Lee, Jr., 1st Lieut., Iowa City, Air Corps Station, nonflying status, Moffett Field, Calif.
SERERES, Edgar Paul, 1st Lieut., Hiawatha, Kan., Corps Area Service Command Reception Center, Fort Leavenworth, Kan.
SEVERIN, Matthew Joseph, Major, Omaha, 14th Medical Regiment, Camp Bowie, Brownwood, Texas.
SEXTON, Thomas Scott, 1st Lieut., Rochester, Minn., Ogden Air Depot (nonflying status), Ogden, Utah.
SHAMBERG, Alfred Harold, 1st Lieut., Omaha, 53d Field Artillery Battalion, Fort Leonard Wood, Mo.
SHANER, John Frederick, 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
SHANKLIN, John Harold, 1st Lieut., Kansas City, Kan., Cavalry Replacement Center Infirmary, Fort Riley, Kan.
SHAPIRO, Jesse, 1st Lieut., St. Paul, Corps Area Service Command Station Hospital, Camp J. T. Robinson, Ark.
SHULLER, Thurman, 1st Lieut., Ozark, Ark., nonflying status, Moffett Field, Calif.
SIENKNECHT, Elmer Charles, Jr., 1st Lieut., Kansas City, Mo., Camp Grant, Ill.
SIMONS, Stanley John, 1st Lieut., Akeley, Minn., Air Base (nonflying status), Pendleton, Ore.
SIMPSON, Fredric Elmer, 1st Lieut., Iowa City, Iowa, Camp Grant, Ill.
SMEAD, Howard H., 1st Lieut., Newton, Iowa, Camp Grant, Ill.
SORENSON, Philip Woodrow, 1st Lieut., Minneapolis, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
SPEARS, Charles A., 1st Lieut., Billings, Mo., Air Base (nonflying status), Pendleton, Ore.
SPOENEMAN, Marlin Carl, 1st Lieut., Normandy, Mo., Field Artillery, 2d Cavalry Division, Fort Riley, Kan.
STAGGS, William Andrew, 1st Lieut., Iowa City, Corps Area Service Command, Station Hospital, Camp Joseph T. Robinson, Ark.
STANDEVEN, James Wylie, 1st Lieut., Oakland, Iowa, Camp Grant, Ill.
STEPHENS, LeRoy Jules, Captain, St. Louis, Camp Grant, Ill.
STEPMAN, Theodore Roosevelt, 1st Lieut., St. Louis, Camp Grant, Ill.
STICKLER, Ralph O., 1st Lieut., Kirksville, Mo., 43d Engineers, Camp J. T. Robinson, Ark.
STRUB, Giles Joseph, 1st Lieut., St. Louis, Camp Grant, Ill.
SULLIVAN, William Joseph, Captain, Kirksville, Mo., 2d Cavalry Division, Fort Riley, Kan.
SUTTER, Richard Anthony, Captain, St. Louis, 87th Quartermaster Battalion, Fort Leonard Wood, Mo.
SWAN, Kenneth Carl, 1st Lieut., Iowa City, Corps Area Service Command Station Hospital, Fort Riley, Kan.
SWANN, Clair Leo, 1st Lieut., Leavenworth, Kan., Air Base (nonflying status), Pendleton, Ore.
TAYLOR, Wendel William, 1st Lieut., Ireton, Iowa, Camp Grant, Ill.
TEISBERG, John Edwin, 1st Lieut., Middle River, Minn., Air Base (nonflying status), Pendleton, Ore.
THOMPSON, Albert Wendell, 1st Lieut., Bentonville, Ark., 2d Cavalry Division, Fort Riley, Kan.
THURLOW, Ralph Moody, Captain, Kansas City, Mo., 64th Medical Battalion, Camp Bowie, Brownwood, Texas.
TINNEY, Malcolm James, 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
TROWBRIDGE, Ellsworth Haydn, Jr., 1st Lieut., Kansas City, Mo., Corps Area Service Command, Station Hospital, Fort Leonard Wood, Mo.
TVERSKY, Edgar Louis, 1st Lieut., St. Louis, Air Corps Station (nonflying status), Mather Field, Calif.

TYRRELL, Thomas Carroll, 1st Lieut., St. Louis, Corps Area Service Command Station Surgeon's Office, Fort Leonard Wood, Mo.
VAN DEVENTER, Roy William, Major, Wellington, Kan., Corps Area Service Command Station Hospital, Fort F. E. Warren, Wyo.
VAN VALKENBURG, John Donald, 1st Lieut., Floodwood, Minn., Air Base (nonflying status), Pendleton, Ore.
VINES, Robert William, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
VON KAENEL, Joseph Edward, 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
WALL, David Royal, 1st Lieut., Wichita, Kan., Corps Area Service Command, Induction Station, Fort Leavenworth, Kan.
WALL, Walton B., Jr., 1st Lieut., Fayetteville, Ark., Camp Grant, Ill.
WATERBURY, Charles Arthur, Jr., 1st Lieut., Waterloo, Iowa, Camp Grant, Ill.
WAYLAN, Thornton Lewis, 1st Lieut., Nashville, Kan., Air Base (nonflying status), Pendleton, Ore.
WEISEL, Wilson, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Everett, Wash.
WEISMAN, Rodger Elmer, 1st Lieut., Rochester, Minn., Air Corps Station, nonflying status, Moffett Field, Calif.
WIESELER, Rudolph John, 1st Lieut., Avoca, Iowa, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
WIIG, Laurence Maxon, 1st Lieut., Rochester, Minn., Air Corps Station, nonflying status, Moffett Field, Calif.
WILLUMSEN, Henry Christian, 1st Lieut., Iowa City, Air Corps Station, nonflying status, Moffett Field, Calif.
WISE, Ralph Waldo Emerson, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
WOLFE, Otis Decker, 1st Lieut., Marshalltown, Iowa, Corps Area Service Command Station Hospital, Fort Riley, Kan.
WORD, Harlan Lamar, 1st Lieut., St. Paul, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
WOZENCRAFT, Jean Paul, 1st Lieut., Rochester, Minn., Air Corps Station, nonflying status, Moffett Field, Calif.
YOSKIT, Harry, Captain, Festus, Mo., Medical Replacement Center, Camp Grant, Ill.

Orders Revoked

ALLIBAND, George Thomas, 1st Lieut., Omaha, Air Corps Station (nonflying status), Fort Douglas, Utah.
BOYD, Eugene Judd, 1st Lieut., Iowa City, Fort Riley, Kan.
COHN, Mortimer Monty, 1st Lieut., Cheyenne Agency, S. D., Air Base (nonflying status), Fresno, Calif.
HAMILTON, Eugene H., 1st Lieut., Hannibal, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
HILL, John Roger, 1st Lieut., Rochester, Minn., Air Corps Gunnery School (nonflying status), Las Vegas, Nev.
HONICH, Nicholas Joseph, 1st Lieut., O'Fallon, Mo., Air Base (nonflying status), Boise, Idaho.
JANUARY, Lewis Edward, 1st Lieut., Iowa City, F. E. Warren, Wyo.
LINDAHL, Wallace William, 1st Lieut., Rochester, Minn., Advanced Flying School (nonflying status), Mather Field, Calif.
NORD, Don Harold, 1st Lieut., Huxley, Iowa, Air Base (nonflying status), Pendleton, Ore.

Relieved from Active Duty

AHERN, Gerald Steber, 1st Lieut., Minneapolis, Fort Snelling, Minn.
AHRENS, John Heideman, 1st Lieut., University City, Mo., Jefferson Barracks, Mo.
BARRY, William Burnett, 1st Lieut., Kansas City, Mo., Fort Leavenworth, Kan.
BOURNE, Melvin Goodwin, 1st Lieut., Algona, Iowa, Fort Des Moines, Iowa.
BUSSABARGER, Robert Allison, 1st Lieut., Wardell, Mo., Camp J. T. Robinson, Ark.
CIMFEL, Adolph Bohumil, 1st Lieut., Scotia, Neb., Corps Area Service Command Replacement Center Infirmary, Fort Leonard Wood, Mo.
CLARK, Richardson Evans, 1st Lieut., Manchester, Iowa, Corps Area Service Command, Station Hospital, Fort Leonard Wood, Mo.
EVANS, Byron Henry, 1st Lieut., Cedar Rapids, Iowa, Fort Des Moines, Iowa.
GLASSMAN, Arthur Leonard, 1st Lieut., Iowa City.
GOLDWASSER, Herbert Valentine, Captain, St. Louis, Camp J. T. Robinson, Ark.
HAMILTON, Charles Ferrill, 1st Lieut., Iowa City, Fort Des Moines, Iowa.
HAMILTON, Ralph Block, 1st Lieut., West Memphis, Ark., Camp J. T. Robinson, Ark.
HARRIS, Charles Preston, 1st Lieut., Leachville, Ark.
HAVEL, Harold William, 1st Lieut., Jordan, Minn., Field Artillery, 2d Cavalry Division, Fort Riley, Kan.
HAZLET, Kenneth Kirk, 1st Lieut., Iowa City, Fort Des Moines, Iowa.
HOFFMAN, Richard Frederick, 1st Lieut., Warren, Ark., Camp J. T. Robinson, Ark.
HUBER, Ervin Theodore, Captain, St. Louis, Corps Area Service Command, Replacement Center Infirmary, Jefferson Barracks, Mo.
HURST, Thomas Charles, 1st Lieut., Kansas City, Mo., Fort Leavenworth, Kan.
KELSEY, Kenneth Lawrence, 1st Lieut., Aurora, Mo., Corps Area Service Command Station Hospital, Fort Meade, S. D.
KENOYER, William Ray, 1st Lieut., Hugoton, Kan., Fort Riley, Kan.
KYGER, Edgar Ross, Jr., 1st Lieut., Kansas City, Mo., Field Artillery, 2d Cavalry Division, Fort Riley, Kan.
LOVE, William Robert, 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Snelling, Minn.
MacDONALD, William Charles, 1st Lieut., St. Louis, Jefferson Barracks, Mo.
MARKING, George Henry, 1st Lieut., Osseo, Minn., Fort Snelling, Minn.
McCAIN, Donovan Legare, 1st Lieut., St. Paul, Fort Snelling, Minn.
MOEN, Berwyn Harold, 1st Lieut., Inwood, Iowa, Fort Omaha, Neb.
MUNSCH, Girard Augustus, 1st Lieut., St. Louis, Jefferson Barracks, Mo.
OLSON, Alton Curtis, 1st Lieut., Minneapolis.
OLSON, Duane Charles, 1st Lieut., Gaylord, Minn., Fort Snelling, Minn.
PETERS, Gustavus Alfred, 1st Lieut., Rochester, Minn., Air Base (nonflying status), Portland, Ore.
POHLMAN, John Francis, 1st Lieut., Wichita, Kan., Fort Leavenworth, Kan.
PORTUONDO, Buenaventura Charles, Captain, St. Louis, Corps Area Service Command Station Hospital, Camp Joseph T. Robinson, Ark.
PRACHAR, Gordon Allen, 1st Lieut., Madison, Neb.
QUATTLEBAUM, Frank Walter, 1st Lieut., Crookston, Minn., Fort Snelling, Minn.
RANKER, Clarence Andrew, 1st Lieut., Powell, Wyo., Corps Area Service Command Induction Station, Jefferson Barracks, Mo.
REEVES, Eugene Albert, 1st Lieut., Kansas City, Kan., Fort Leavenworth, Kan.
REID, Joe Winston, 1st Lieut., Arkadelphia, Ark., Camp J. T. Robinson, Ark.
ROBINSON, Robert Roy, Jr., 1st Lieut., St. Louis.
ROGERS, Charles Wesley, 1st Lieut., Heron Lake, Minn., Corps Area Service Command Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo.
SCALES, James Russell, 1st Lieut., Rochester, Minn., Fort Snelling, Minn.
SEAMAN, Charles LeRoy, 1st Lieut., Mount Ayr, Iowa, 4th Cavalry, Fort Meade, S. D.
STEINLE, George Henry, Captain, Burlington, Iowa, Camp J. T. Robinson, Ark.
THROCKMORTON, James Frederick, 1st Lieut., Des Moines, Iowa, Corps Area Service Command Station Hospital, Fort Riley, Kan.
VINES, Robert William, 1st Lieut., Rochester, Minn.
VON KAENEL, Joseph Edward, 1st Lieut., St. Louis., Air Base (nonflying status), Everett, Wash.
VOUCH, Orrie Alexander, Jr., 1st Lieut., Iowa City, Fort Des Moines, Iowa.
WALL, Walton B., Jr., 1st Lieut., Fayetteville, Ark., Camp J. T. Robinson, Ark.
WATERBURY, Charles Arthur, Jr., 1st Lieut., Waterloo, Iowa, Fort Des Moines, Iowa.
WEISEL, Wilson, 1st Lieut., Rochester, Minn.
WELLS, Aubrey Hanson, 1st Lieut., Boonville, Mo., Fort Leonard Wood, Mo.
WIIG, Laurence Maxon, 1st Lieut., Rochester, Minn.
WOLPERT, Paul Louis, 1st Lieut., Onawa, Iowa, Corps Area Service Command Replacement Center Infirmary, Fort Leonard Wood, Mo.
WORTHEN, Sam Henry, 1st Lieut., Afton, Wyo., Corps Area Service Command Station Hospital, Fort Snelling, Minn.

WAR DEPARTMENT

The following additional medical reserve officers have been ordered to extended active duty by the War Department, Washington, D. C.:

AXELROD, Bernard, 1st Lieut., Los Angeles.
BEARD, Donald Edwin, 1st Lieut., Smyrna, Ga.
BELL, Nelson Clark, 1st Lieut., San Francisco.
BONDURANT, Herbert William, Jr., 1st Lieut., Chevy Chase, Md.
BROWN, Louis Emmitt, Jr., 1st Lieut., Akron, Ohio.
BUCKLEY, John P., 1st Lieut., Fresno, Calif.
CANNON, Edward Riley, 1st Lieut., Oneida, N. Y.
CRAMPTON, Alexander B., 1st Lieut., Baltimore.
GEIB, Wayne Allen, 1st Lieut., Philadelphia.
HULETT, Albert Groves, Lieut. Col., East Orange, N. J.
JACOBSON, Richard William, 1st Lieut., Seattle.
MacNEILL, Arthur Edson, 1st Lieut., Hanover, N. H.
MARTIN, Walter Patrick, 1st Lieut., Los Angeles.
MARTINI, Arthur Peter, 1st Lieut., St. Louis.
McCREIGHT, David Wade, 1st Lieut., Marlboro, N. J.
MOUNCE, Darrell D., 1st Lieut., Los Angeles.
NOVAK, Joseph Francis, 1st Lieut., Pittsburgh.
O'BRIEN, John Patrick, Captain, Rochester, Minn.
PADGET, Paul, 1st Lieut., Baltimore.
PEARMAN, Robert Oliver, Captain, Rochester, Minn.
ROSE, Frederick A., 1st Lieut., Cleveland.
STEWART, Joseph Spencer, Major, Miami, Fla.
STONE, Ralph Enck, 1st Lieut., Connellsville, Pa.
SULLIVAN, John C., 1st Lieut., Washington, D. C.
TALLANT, Edward James, 1st Lieut., Philadelphia.
WAINWRIGHT, Talcott, Captain, Moscow, Pa.
WILKS, Frank Wallace, 1st Lieut., Los Angeles.
WILLIAMS, Glenn LeRoy, Captain, Philadelphia.
WILSON, James E., 1st Lieut., Clarksburg, W. Va.
WOLIN, Irving, 1st Lieut., Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Tri-State Meeting.—The Tri-State Medical Society (Louisiana, Texas and Arkansas) will meet in El Dorado, September 23-24, under the presidency of Dr. Rufus B. Robins, Camden, whose official address will be entitled "The Human Element in Medicine." Among other speakers will be:

Dr. Guy A. Caldwell, New Orleans, Measures for Prevention in Treatment of Gas Gangrene.
Dr. Alfred I. Folsom, Dallas, Texas, Minor Urologic Procedures of Interest to General Practitioners.
Dr. James S. Speed, Memphis, Tenn., Treatment of Ununited Fractures of the Neck of the Femur.
Dr. Herbert Fay H. Jones, Little Rock, The Female Urethra.
Dr. Marcus Pinson Neal, Columbia, Mo., Pernicious Anemia.
Dr. William B. Carrell, Dallas, Primary Bone Tumors: Clinical Diagnostic Study.
Dr. Charles T. Stone, Galveston, Newer Aspects of Pneumonia.
Dr. Oliver C. Melson, Little Rock, Treatment of Hypertension.
Dr. Walter G. Stuck, San Antonio, Recent Developments in Compound Fracture Treatment.
Dr. Wallace Marshall, Appleton, Wis., Newer Therapy for Acne Vulgaris.

Medical, urologic, orthopedic and clinical pathologic conferences will also form a part of the program.

CALIFORNIA

Study of Trichinosis.—A study of 275 cases of human trichinosis reported to the San Francisco Department of Health from 1929 up to August 1 of this year revealed that 61 cases were attributed to contaminated pork sausage. Next in order was salami, accounting for 54 cases, fresh pork 40, Mettwurst 30, ground pork and meat loaf 11, raw pork 6, pork chops or steaks 6, ham 4, home cured salami 3 and raw pork sausage 1; in 7 cases the food causing the trichinosis was bear meat. Many of the 30 cases reported in 1934 were traced to salami, and in that year the city department of health instituted rigid control measures for the preparation and sale of this food. Since then no cases of trichinosis attributed to local commercially prepared salami have been reported. In contrast to the 184 cases recorded for the six years preceding 1935, during the second half of the twelve year period 31 cases were noted in 1935, 18 in 1936, 9 in 1937, 19 in 1938, 3 in 1939, 8 in 1940 and 4 to August 1 of the present year. The health department points out that the survey demonstrated some of the difficulties involved in obtaining specimens of food for laboratory analysis when trichinosis is suspected. Of the 275 cases reported for the entire period, laboratory examination of the food involved was obtained in only 22 cases. In many cases diagnosis was made by clinical findings and examination of the patient's blood for further confirmation.

COLORADO

State Medical Meeting in Estes Park.—The seventy-first annual session of the Colorado State Medical Society will be held at the Stanley Hotel, Estes Park, September 17-20. The guest speakers will be:

Dr. Edwin Davis, Omaha, Factors Tending to Minimize the Prostatectomy Hazard; Chemical Carcinogenesis, Drugs, Dyes, Remedies and Cosmetics, with Particular Reference to Bladder Tumors.
Dr. Herbert E. Coe, Seattle, Atresias of the Alimentary Tract; Relation of Growth and Development to Children's Surgery.
Dr. Robert A. Bier, Major, M. R. C., U. S. Army, Washington, D. C., The Physician in National Defense.
Dr. Louis E. Viko, Salt Lake City, Evaluation of Chest Pain.
Chauncey D. Leake, Ph.D., San Francisco, Recent Advances in Pharmacology; Pharmacology of Vitamins and Endocrines.
Dr. William F. Rienhoff Jr., Baltimore, Present Status of the Treatment of Malignant Tumors of the Lung; Surgical Treatment of Peptic Ulcer.
Dr. Elmer L. Sevringhaus, Madison, Wis., Pituitary Therapy in General Practice; Treatment of the Menopause.
Dr. Donald H. Slaughter, Dallas, Texas, Use of Morphine-Prostigmine Analgesia in Obstetrics.

Dr. Guy C. Cary, Grand Junction, the incoming president, will deliver his address Thursday afternoon. Friday afternoon there will be a panel discussion on "Differential Diagnosis and Management of Acute Swellings About the Face and Neck." Dr. Theodore E. Beyer, Denver, will be the leader and Dr. Frederic O. Kettelkamp, Colorado Springs, the collaborator. There will be round table luncheons throughout the session conducted by the guest speakers. The annual stag dinner will be held Friday evening; the name of the guest at this session has not yet been announced. In addition Dr. Slaughter will discuss "Pseudomedicine." Robert L. Stearns, LL.D., president of the University of Colorado, Boulder, will be the guest speaker at the annual banquet Saturday evening. His subject will be "A Pattern for Public Education."

DELAWARE

Personal.—Richard W. Linton, Ph.D., assistant professor of pathology, Cornell University Medical College, New York, has joined the staff of the Biochemical Research Foundation, Newark. Dr. Linton taught bacteriology at Columbia University from 1926 to 1931 and later was officer in charge of cholera inquiry, Indian Research Fund Association, All-India Institute of Hygiene and Public Health, Calcutta.

DISTRICT OF COLUMBIA

Annual Scientific Assembly.—The Medical Society of the District of Columbia will hold its 1941 scientific assembly at the Mayflower Hotel, Washington, September 30-October 1-2. The speakers will include:

Dr. Isaac Alexander Bigger, Richmond, Va., Intrathoracic Injuries.
Dr. Walter E. Dandy, Baltimore, Injuries of the Head.
Dr. Soma Weiss, Boston, Preeclamptic and Eclamptic Toxemia in Pregnancy.
Dr. Thomas Fitz-Hugh Jr., Philadelphia, Differentiation of Anemias.
Dr. Harvey B. Stone, Baltimore, Diagnosis of Rectal Diseases.
Dr. Oscar B. Hunter, Washington, Newer Laboratory Procedures in the Diagnosis of Obscure Fevers.
Dr. Harold T. Hyman, New York, Massive Dose Chemotherapy of Early Syphilis by the Intravenous Drip Method: Five Day Treatment.
Dr. Eli K. Marshall Jr., Baltimore, Sulfanilylguanidine as a Chemotherapeutic Agent for Intestinal Infections.
Dr. William G. Lennox, Boston, Epilepsy and Migraine: Practical Points in Diagnosis and Treatment.
Dr. Wendell S. Muncie, Baltimore, Why Are There So Many Neurotics?
Dr. Joseph C. Yaskin, Philadelphia, Practical Treatment of the Common Neuroses.
Dr. Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Washington, Public Health and National Defense.
Rear Admiral Ross T. McIntire, surgeon general, U. S. Navy, Washington, Aviation Medicine in the Navy.
Major Gen. James C. Magee, surgeon general, U. S. Army, Washington, Care and Evacuation of Battle Casualties in Modern War.
Lieut. Comdr. Lloyd R. Newhouser, M. C., U. S. Navy, Washington, Use of Blood Substitutes by the Armed Forces.
Col. Leonard G. Rowntree, chief, medical division, Selective Service System, Washington, Health of the Nation as Revealed by Selective Service.

GEORGIA

Memorial to Dr. Roberts.—The Fulton County Medical Society, Atlanta, plans to establish a memorial in its new building now under construction to Dr. Stewart R. Roberts, Atlanta, who died on April 14. Dr. Roberts was one of the original committee named to develop plans for the society's new home and once served as the society's president. He was a member of the House of Delegates of the American Medical Association from 1916 to 1920 and at the time of his death was professor of clinical medicine at Emory University School of Medicine, Atlanta. The county medical society will accept contributions from any one wishing to participate in the memorial.

ILLINOIS

Campaign Against Venereal Disease.—The state department of health has agreed to act as co-sponsor in a WPA drive against venereal diseases originally intended for the Chicago area, newspapers announced. The agreement was reached at a conference in Springfield, July 2, attended, among others, by Dr. Roland R. Cross, state health officer, Governor Green, Dr. Oliver C. Wenger, U. S. Public Health Service, representing the health commissioner of Chicago, Dr. Herman N. Bundesen, and Dr. Herman M. Soloway, state venereal disease officer. More than $1,000,000 has been allocated to the Chicago area campaign and it is believed that additional funds will be obtained to extend the drive into downstate communities, it was said. Tentative arrangements call for the establishment of a training center where WPA field workers from both Chicago and downstate will be taught methods of finding sources of infection for both syphilis and gonorrhea. All infected persons found will be asked to submit to modern treatment, which would make them noninfective in a short time. If an infective person refuses to be treated or violates his quarantine, his residence will be placarded. In each case an attempt will be made to learn where the disease was contracted with a view to bringing under control the source of the disease. The project is designed as a national defense

measure to protect both civilians and draftees and to bring under treatment the draftees who are rejected because of syphilis and gonorrhea. In a current case finding program in Chicago, more than 56,000 persons have been found to have syphilis in a total of 1,046,425 persons examined.

Chicago

Lecture on the Cyclotron.—Ernest O. Lawrence, Ph.D., professor of physics at the University of California, Berkeley, and 1939 winner of the Nobel Prize in physics, will deliver a public lecture on "The Cyclotron in Medicine," illustrated with lantern slides and experimental demonstrations. The Institute of Medicine of Chicago will sponsor the lecture, which will be presented in the auditorium of the Museum of Science and Industry in Jackson Park, September 25. Dr. Lawrence is the inventor of the cyclotron.

Luncheons for Northwestern Alumni.—The Northwestern University Medical Alumni Association announces three special luncheons to be held during the annual sessions of the Michigan, Indiana and Colorado state medical societies. In Colorado the luncheon will be at the Stanley Hotel in Estes Park, September 19; Michigan, at the Peninsula Club, Grand Rapids, September 18; Indiana in Indianapolis, September 24. A colored movie entitled "Northwestern Marches On" will be a feature of the luncheon meetings.

INDIANA

State Medical Meeting in Indianapolis. — The ninety-second annual session of the Indiana State Medical Association will be held at the Claypool Hotel, Indianapolis, September 23-25, under the presidency of Dr. Albert M. Mitchell, Terre Haute. The following out of state speakers will participate:

Dr. Louis Hopewell Bauer, Hempstead, N. Y., Aviation Medicine.
Dr. Jerrold Peerman Nesselrod, Evanston, Ill., Rectal and Lower Sigmoid Diseases.
Dr. Richard B. Cattell, Boston, Surgical Diseases of the Large Intestine.
Dr. James P. Leake, U. S. Public Health Service, Bethesda, Md., Poliomyelitis.
Dr. Ralph Pemberton, Philadelphia, Arthritis.
Dr. Russell L. Haden, Cleveland, More Common Blood Dyscrasias Seen by the General Practitioner.
Dr. William Kenneth Jennings, Evanston, Ill., A New Method of Repair for Inguinal Hernia.
Dr. Sanford R. Gifford, Chicago, Relation Between the Eye and the Upper Respiratory Tissues.
Dr. Paul M. Wood, New York, Facts and Fallacies Concerning Modern Anesthesia.
Dr. William D. Province, New York, Chemotherapy.
Dr. Charles Mazer, Philadelphia, Endocrine Treatment in General Practice.
Dr. Clarence D. Selby, Detroit, Industrial Health.
Dr. John J. Moorhead, New York, Essentials in Fracture Treatment.
Dr. Fred M. Smith, Iowa City, Management of the Patient with Coronary Disease.

The annual banquet, Wednesday evening, will be addressed by Dr. Fred W. Rankin, Lexington, Ky., President-Elect, American Medical Association, on "The Medical Profession and the Emergency." Michael "Mickey" MacDougall, card detective and author of "Gamblers Don't Gamble," will also speak. Dr. Wood will be guest of honor at a luncheon given by the section on anesthesia Wednesday afternoon. The medical section will hold a panel discussion Wednesday on "The Clinical Application of the Newer Laboratory Procedures as Pertains to the Man in General Practice" with the following speakers: Drs. James O. Ritchey, Indianapolis, chairman; Alfred S. Giordano, South Bend; Etta B. Selsam, Terre Haute; Wemple Dodds, Crawfordsville, and Gordon B. Wilder, Anderson. The woman's auxiliary will meet during the annual session of the state medical society. The conference of Indiana health officers will be held at the State Board of Health Building, Indianapolis, September 22-23. Speakers will include Sr. Surg. Frank V. Meriwether, U. S. Public Health Service, on "Your Responsibility in the National Defense Program."

IOWA

Society News.—At a meeting of the Dallas-Guthrie Counties Medical Society at the State Hospital, Woodward, July 17, speakers included Dr. Clarence M. Porter, Woodward, on "Treatment of Acute Laryngotracheobronchitis."——Dr. Frank R. Peterson, Iowa City, addressed the Buchanan County Medical Society, July 11, on "Malignant and Benign Conditions of the Large Bowel."

New Division of Cancer Control. — The Iowa State Department of Health announces the creation of a new division of cancer control. Dr. Edmund G. Zimmerer, Des Moines, has been made director of the new unit, which will supervise expanded cancer control activities in the state. It will direct statistical studies and the establishment of a tumor registry and will cooperate with agencies concerned with the control of cancer. Three tumor clinics are already active, and it is planned to provide additional facilities in other parts of the state.

Postgraduate Programs. — The Polk County Medical Society, Des Moines, announces its postgraduate programs for the coming year. September 17, Drs. Fred Z. Havens and Bayard T. Horton, both of Rochester, Minn., will discuss "Plastic Surgery" and "Treatment of Headache" respectively. Members of the society, all of Des Moines, will present the program October 15:

Dr. Henry G. Decker, Subarachnoid Hemorrhage.
Dr. Howard D. Gray, Significance of Uterine Hemorrhage.
Dr. John T. Strawn, Gastric Hemorrhage.
Dr. John C. Parsons, Pulmonary Hemorrhage.

Institutes on Industrial Health.—A second series of special institutes on industrial health, sponsored by the Iowa State Department of Health in cooperation with the committee on industrial health and the speakers' bureau of the state medical society, will be held this month. Each institute will be scheduled as a special meeting of the local county medical society, and the officers of each society are making the arrangements. The second series will be in Council Bluffs September 22, Waterloo September 23 and Dubuque September 24. The first series was conducted in various centers in June, and the programs were presented by guest speakers.

MAINE

New Medicolegal Officers.—Dr. William Holt, Portland, was elected president of the Maine Medico-Legal Society at its annual meeting in York Harbor, June 24. Other officers are Albert Knudsen, attorney, Cumberland County, Portland; Dr. Walter S. Stinchfield, Skowhegan, treasurer, and Dr. George L. Pratt, Farmington, secretary.

MINNESOTA

Personal.—Dr. John M. Adams, Minneapolis, clinical assistant professor of pediatrics, University of Minnesota Medical School, Minneapolis, has been appointed to take charge of the outpatient pediatrics department, succeeding Dr. Chester A. Stewart, who resigned to take charge of the department of pediatrics at the Louisiana State University School of Medicine, New Orleans.——Dr. Donald C. Balfour, director of the Mayo Foundation, Rochester, recently received the honorary degree of doctor of science from McMaster University, Hamilton, Ont.

Promotions at University of Minnesota.—The following promotions at the University of Minnesota Medical School, Minneapolis, have been announced:

Dr. Charles D. Creevy to professor of surgery, chief of the division of urology, and assistant dean of the medical school.
Dr. James A. Johnson to clinical professor of surgery.
Dr. Abe B. Baker, associate professor of nervous and mental diseases and of pathology.
Dr. John R. Paine, associate professor of surgery.
Dr. Wesley W. Spink, associate professor of medicine.
Dr. Archibald H. Beard, clinical associate professor of medicine.
Dr. Edward T. Evans, clinical associate professor of surgery.
Dr. Royal C. Gray, clinical associate professor of nervous and mental diseases.
Dr. Nathaniel H. Lufkin, clinical associate professor of pathology.
Dr. Kenneth A. Phelps, clinical associate professor of otolaryngology.
Dr. Morse J. Shapiro, clinical associate professor of medicine.
Dr. Samuel A. Weisman, clinical associate professor of medicine.
Dr. Lillian Cottrell, assistant professor of nervous and mental diseases.
Dr. Charles E. McLennan, assistant professor of obstetrics and gynecology.
Dr. Harold H. Rosenblum, assistant clinical professor of medicine.
Dr. Henry M. Weyrauch Jr., assistant clinical professor of urology.
Dr. Sidney J. Shipman, clinical professor of medicine.

NEW YORK

Typhoid Carrier in Children's Camp. — Four cases of typhoid among 60 children who were at an upstate camp from June 25 to July 15 have been traced to a woman cook in the camp who was a carrier. *Health News* reports that the woman had been declared a carrier in 1939, that she had taken the position as camp cook contrary to regulations forbidding carriers to handle food and drink for public consumption, and that she had left New York City without notifying the local health department of her change of address. At the time of the report she was in the custody of a hospital awaiting action by New York City authorities. All the children in the camp were sent to their homes and are under observation.

District Meetings.—The annual meeting of the First District Branch of the Medical Society of the State of New York will be held at Mount Sinai Hospital, New York, October 8. The program, arranged by Dr. Reuben Ottenberg, New York,

will consist of case presentations, ward rounds, operations, round table discussions and other activities covering all fields of medicine except obstetrics. —— The Fifth District Branch meeting will be held at Syracuse, September 23, with the following speakers:

Dr. Leo E. Gibson, Syracuse, Blood Stream Infection of the Cortex of the Kidney.
Dr. Walter S. McClellan, Saratoga Springs, Facilities, Personnel and Waters as Presented for Treatment at the Saratoga Spa.
Dr. William H. Wehr, Buffalo, New Concepts of the Etiology of Cancer.
Dr. Howard K. Thompson, Boston, Chronic Arthritis from the Standpoint of the Practicing Physician.
Dr. John Scudder, New York, Blood Studies in Shock as a Guide to Therapy.
Dr. Charles F. W. Bove, New York, Modern Care of Civilian and Military Casualties Under Warfare.

New York City

Enrolment of Nursing Students Increases.—The seven schools of nursing owned and operated by the city of New York admitted 373 new students for the fall term, as compared with 254 last year, according to an announcement from the Department of Hospitals. The department is making a special effort to forestall the threat of a shortage of qualified nurses resulting from defense needs. The city schools include Bellevue Hospital with an enrolment of 348; Mills Training School for Men, 68; Cumberland Hospital, 88; Harlem Hospital, 128; Kings County Hospital, 599; Metropolitan Hospital, 176, and Fordham Hospital, which has a new school with a class of 40.

Defects Discovered in Examination of Youths.—The health units of the National Youth Administration for New York City and Long Island examined 13,297 young men and women during the eleven month period ended July 31, according to a recent report. The defects and diseases most frequently found were dental defects in 92.6 per cent, visual defects in 40 per cent, malnutrition in 14.3 per cent and cutaneous lesions in 11.5 per cent. Diseases of the nose and throat occurred in 8.5 per cent, heart disease in 5.5 per cent and high blood pressure in 4 per cent. Those who showed need for remedial treatment were referred to private physicians, private dentists or hospital and dental clinics if they could not afford private care. Arrangements for the work of the NYA health units were made through the cooperation of the New York City Department of Health, the health commissioners of Nassau and Suffolk counties and the Suffolk and Nassau county medical societies.

OHIO

Postgraduate Day.—The Stark County Medical Society will hold its third annual postgraduate day at the Courtland Hotel, Canton, October 8. The following members of the staff of Johns Hopkins University School of Medicine, Baltimore, will present the program: Drs. William F. Rienhoff Jr., associate professor of surgery; Esther L. Richards, associate professor of psychiatry, and Charles W. Wainwright, associate in medicine.

New Health Officers.—Dr. William B. Wild has been appointed health commissioner of the combined Mansfield city-Richland County health district, succeeding the late Dr. Roy C. Rehder; prior to his appointment as assistant to Dr. Rehder last November, Dr. Wild was coroner of Holmes County.—— Dr. Albert J. Helm, formerly of Toledo, has been named health commissioner of Madison County, succeeding Dr. Francis R. Neff, Lakewood, who was called to active military service at Fort Wayne, Ind.

Personal. — Dr. Harold H. Brueckner, Fort Wayne, has been appointed superintendent of the Lima District Tuberculosis Hospital, succeeding Dr. Edward W. Laboe, resigned.——Dr. Herman M. Turk has resigned as superintendent of the Lima State Hospital, and Dr. Roy E. Bushong, Columbus, has been appointed to succeed him.——Dr. William M. German, pathologist at the Good Samaritan Hospital, Cincinnati, has returned from a three months stay in Bogotá, Colombia, where he was guest professor of pathology at the National University of Colombia.——Dr. George W. Jacoby Jr., Ashley, has been appointed health director of Wooster College, Wooster.

PENNSYLVANIA

District Meeting.—The annual meeting of the Second Councilor District of the Medical Society of the State of Pennsylvania was held in Allentown, September 11, with Dr. Richard B. Cattell, Boston, as the guest speaker on "Differential Diagnosis and Management of Surgical Lesions of the Intestines." In addition, a series of brief talks was presented by officers of the state medical society: Drs. Francis F. Borzell, Philadelphia, president; Lewis T. Buckman, Wilkes-Barre, president-elect; Walter F. Donaldson, Pittsburgh, secretary; Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation, and Frank W. Konzelmann, Philadelphia, chairman of the laboratory committee.

TEXAS

Illegal Practitioner Receives Maximum Fine.—Harry M. Hoxsey, operator of a cancer clinic in Dallas, charged with practicing medicine without a license, was fined $25,000 and court costs and, in addition, received a five month jail sentence July 11, newspapers reported. The fine was the heaviest on such a charge ever imposed in the Dallas County Criminal Court, which found the defendant guilty on five counts in the complaint. Hoxsey's lawyers have filed motion for a new trial and the defendant is free pending appeal, it was stated.

Medal Awarded to Colonel Craig.—The Scientific Society of San Antonio recently presented the Franklin Medal to Col. Charles F. Craig, U. S. Army, retired, San Antonio, professor of tropical medicine emeritus, Tulane University of Louisiana School of Medicine, New Orleans, for distinguished work in science. Colonel Craig is the first recipient of the medal donated by Colonel and Mrs. W. Lee Hart of San Antonio and named in honor of Mrs. Hart's father, the late Thomas H. Franklin, a fellow of the society. The award was presented at the annual dinner of the society, at which time Colonel Craig gave the principal address. Colonel Craig graduated at Yale University School of Medicine, New Haven, in 1904. He was pathologist and bacteriologist for the army hospitals 1898-1906; assistant curator, Army Medical Museum, and assistant professor of bacteriology and clinical diagnosis, Army Medical School, 1909-1913; commanding officer, department laboratory, central department, U. S. Army, Fort Leavenworth, Kan., 1913-1916, department laboratory number 2, El Paso, Texas, 1916-1917, and army laboratory at Yale, 1917-1918; curator, Army Medical Museum, 1918-1920; professor of bacteriology, parasitology and preventive medicine and director of laboratories, Army Medical School, 1920-1922; medical inspector, Hawaiian Department, U. S. Army, 1922-1925; director, department of preventive medicine and clinical pathology, Army Medical School, 1926-1929; commandant at the school, 1929-1930; assistant commandant, Army Medical Center, Washington, D. C., 1930-1931. He was named professor of tropical medicine and director of the department at Tulane University of Louisiana School of Medicine in 1931 and at the graduate school of medicine in 1935. He became emeritus professor on Sept. 1, 1938. He has received the Distinguished Service Medal.

VIRGINIA

Regional Meeting. — The Fourth District and Southside Virginia Medical Society met in Petersburg, August 5, with the following speakers, among others: Drs. Herbert C. Jones, Petersburg, on "Experience with Accident Work in the Building of Camp Lee"; Douglas G. Chapman, Richmond, "Chronic Heart Failure and Its Management," and Kester S. Freeman, Kenbridge, "Deltoid Bursitis."

State Medical Meeting at Virginia Beach.—The Medical Society of Virginia will hold its annual meeting at the Cavalier Hotel, Virginia Beach, October 6-8, under the presidency of Dr. Walter B. Martin, Norfolk. The speakers at the general sessions will include:

Comdr. Waddie P. Jackson, M. C., U. S. Naval Reserve, Norfolk, The Airplane, a Possible Means of Transmission of Disease.
Dr. Charles S. White, Washington, D. C., Clinical Consideration of Blood Plasma.
Col. Norman T. Kirk, M. C., U. S. Army, Washington, Some of the Problems of the Medical Department in the Present Emergency.
Dr. James R. Miller, Hartford, Conn., Office Gynecology.
Dr. Henry W. Cave, New York, Medical and Surgical Management of Ulcerative Colitis.
Dr. Randolph H. Hoge, Richmond, Carcinoma of the Cervix.
Drs. Byrd Stuart Leavell and John Osborne McNeel, Charlottesville, Unusual Manifestations of Acute Infectious Mononucleosis.

Dr. Louis Hamman, Baltimore, will be a guest to conduct a clinical pathologic conference. Another feature will be a group of panel discussions on general practice of medicine, surgery in relation to general practice, obstetrics and gynecology and pediatrics. Several special societies will meet during the state society's session, including the Virginia Obstetrical and Gynecological Society, Virginia Radiological Society, Virginia Urological Society, Virginia Orthopedic Society, Virginia Pediatric Society, alumni of the Medical College of Virginia and the Virginia section of the American College of Physicians.

WASHINGTON

Health Officers Appointed.—Dr. John A. Nelson, Longview, has been appointed health officer of Cowlitz County to succeed Dr. Arthur L. Ringle, Kelso, who resigned to become regional medical director of the Farm Security Administration in Portland, Ore.——Dr. Adam D. Schlotthauer, Newport, has been appointed health officer of Pend Oreille County.——Dr. Wallace W. Schwabland, Seattle, has succeeded Dr. Wallace D. Hunt, Seattle, as health officer of King County, according to *Northwest Medicine*.

GENERAL

Conference on Industrial Health.—The second annual American Conference on Industrial Health will be held at the Chicago Towers, Chicago, November 5-6. There will be symposiums on the technical problems, the economics and the social implications of industrial health. One dinner session will be devoted to industrial health, defense and the private practitioner.

Inter-State Postgraduate Medical Association.—The International Assembly of the Inter-State Postgraduate Medical Association of North America will hold its twenty-sixth annual meeting in the Auditorium, Minneapolis, October 13-17. Dr. Arthur G. Sullivan, Madison, Wis., who has been business manager for the association for many years, has been elected managing director by the board of trustees to succeed the late Dr. William B. Peck, Freeport, Ill.

Plans for Congress on Obstetrics and Gynecology.—Plans for the second American Congress on Obstetrics and Gynecology, to be held in St. Louis, April 6-10, 1942, have been announced. Dr. Everett D. Plass, Iowa City, is chairman and Dr. William F. Mengert, Iowa City, is secretary of the program committee. Activities will include general sessions, meetings of individual and combined sections, round table and panel discussions and meetings for the public. There will be medical, nursing, hospital, public health and educators' sections.

The Poliomyelitis Outbreak.—The number of new cases of poliomyelitis reported in Pennsylvania during the week ended September 6 was less than 50, as compared with 65 and 83 the two preceding weeks. The disease has appeared in forty-five of Pennsylvania's sixty-seven counties. Inductions into military service of registrants from ten counties was suspended during the week. Inductions from York County, where cases were most numerous, had been suspended since August 18. The fourteen state teachers' colleges were ordered to postpone their openings from September 8 until September 22.——Infantile paralysis exists in epidemic form in Prince Georges County, Md., it was reported, with 14 cases between July 1 and September 4. There were 24 cases in the District of Columbia during August.——The state health department of Illinois reported on September 2 that 154 cases had been reported for the year as against 82 for the comparable period of 1940. Eighty-one of this year's cases have been in Cook County, in which Chicago is located.

Plague Infection Spreading Eastward.—A plague control conference was called at Salt Lake City, August 28-29, because of evidence that plague infection among wild rodents of the western part of the United States is spreading eastward and to stimulate rat control programs in urban and rural areas. The conference was attended by health officers from California, Oregon, Washington, Nevada, Montana, Idaho, Wyoming, Utah, Colorado, Arizona, New Mexico and North Dakota. Infection among wild rodents has progressed steadily during the past five years from the Pacific Coast eastward as far as the Dakotas. According to the U. S. Public Health Service, outbreaks of human plague have, in the past, almost invariably been preceded by marked increase in the disease among animals which harbor the infection. Surveys conducted by the public health service in 1935 revealed plague infection among wild rodents in Montana, California and Oregon. In each succeeding year, including 1941, infection has been demonstrated in ground squirrels, chipmunks, rats, marmots and other wild rodents in Arizona, California, Idaho, Montana, Nevada, New Mexico, Utah, Washington and Wyoming. Recently the infection among rodents has been discovered as far east as North Dakota. The first outbreak of human plague in this country occurred in 1900 in San Francisco. Plague in California reached epidemic proportions in 1907-1908. Since 1900 there have been 502 cases and 315 deaths in this country. Two human cases of plague, both in California, have been reported this year.

CANADA

Poliomyelitis and Encephalitis Subside.—The Canadian Press reported on September 6 3 new cases of poliomyelitis and 7 of encephalitis in Manitoba, said to be the lowest spread in months. This year there have been 778 cases of poliomyelitis and 420 of encephalitis. On the same date newspapers reported 1 new case of poliomyelitis and none of encephalitis in Alberta. This province has had 112 cases of poliomyelitis with two deaths and 20 of encephalitis with two deaths since the beginning of the epidemic.

Provincial Meeting.—The annual meeting of the British Columbia Medical Association will be held in Vancouver, September 16-18, under the presidency of Dr. Edward Murray Blair, Vancouver. Guest speakers, some of whom will deliver several papers, will be Drs. Thomas Addis, professor of medicine, Stanford University School of Medicine, San Francisco; Lennox G. Bell, associate professor of medicine, Gordon S. Fahrni, assistant professor of surgery and Frederick G. McGuinness, professor of obstetrics, University of Manitoba Faculty of Medicine, Winnipeg; Louis P. Gambee, associate clinical professor of surgery, University of Oregon Medical School, Portland, and Charles K. P. Henry, associate professor of surgery, McGill University Faculty of Medicine, Montreal. Dr. Thomas C. Routley, Toronto, general secretary of the Canadian Medical Association, will take part in a session on medical economics.

LATIN AMERICA

Inter-American Postgraduate Students.—Dr. Roberto Menezes de Oliveira, Rio de Janeiro, Brazil, recently in charge of the department of radiology and cardiology at the Naval Aviation Hospital in Rio de Janeiro, has received a scholarship to study at the University of Michigan Medical School, Ann Arbor. He is one of thirty-seven students who have received travel grants from the U. S. Department of State to enable them to accept scholarships.——Three students in medical fields have recently spent several months at the Institute of Physiology of the University of Buenos Aires, studying under the direction of Dr. Bernardo A. Houssay, director of the institute. They are Dr. Lewis Dexter of the staff of Peter Bent Brigham Hospital, Boston, who worked on arterial hypertension; Raymond L. Zwemer, Ph.D., assistant professor of anatomy at Columbia University, New York, who studied selective permeability of cells to electrolytes, and John W. Bean, Ph.D., assistant professor of physiology at the University of Michigan, Ann Arbor, who studied zoological specificity of renin and hypertension.

Deaths in Other Countries

Dr. Otfrid Foerster, professor of neurology and psychiatry at the University of Breslau, Germany, since 1921, died about June 15, aged 67.

CORRECTIONS

Meeting at Newark Instead of Camden.—In an announcement of the fall meeting of the New Jersey Gastroenterological Society in THE JOURNAL, August 30, page 800, the Academy of Medicine of Northern New Jersey should have been located at Newark instead of Camden.

Radiation Protection in Forty-Five Hospitals.—In the next to the last paragraph of the summary of the article by Scheele and Cowie in THE JOURNAL, August 23, on page 590, the statement regarding calibrations should have read "Calibrations were too infrequent in many hospitals to permit accuracy in the calculation of doses given to patients."

Government Services

Study of Typhus Vaccine

Drs. Rolla E. Dyer and Norman H. Topping of the U. S. Public Health Service, Washington, D. C., have gone to La Paz, Bolivia, to study the effects of a typhus vaccine developed at the Rocky Mountain laboratory of the service at Hamilton, Mont. A news report pointed out that the test was urgently needed because of the possibility that American troops might have to go into regions of South America where typhus exists and also that the United States may supply Britain with the vaccine. Sufficient vaccine for five thousand persons has been sent to Bolivia, which has the highest typhus rate in the Western Hemisphere, it was said.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 12, 1941.

American Nurses Torpedoed

Nine American nurses celebrated Independence Day in a British port. They were the survivors of a party of seventeen coming to set up an American Red Cross Hospital on the former Dutch ship *Maasdam*. One of the boats in which the nurses got away from the ship was damaged and capsized. Those who could swim were told to make for a nearby ship. The others clung to the overturned boat. It is feared that the remaining eight nurses were all drowned. A later report states that ten nurses are safe, but seven and a Red Cross hospital "house mother" are still missing. Four of the rescued nurses drifted for ten days before they were picked up. This is the second occasion on which American nurses have been on a torpedoed ship.

Medicinal Herbs in Wartime

The minister of health has appointed an expert committee to review the present and future requirements of vegetable drugs in the light of empire consumption and trade and facilities for cultivation within the empire; to consider the steps which should be taken to secure organization of cultivation and collection, and to make recommendations. This Vegetable Drugs Committee has now presented an interim report which differentiates two groups of drugs—a long term and a short term group. It is held to be unlikely that any long term policy will materially affect the supply of drugs during the present emergency, as the period preceding production would be too long. A primary essential for a long term policy is an assured market at remunerative prices. This would probably necessitate financial assistance to growers and protective tariffs against supplies from prewar producing countries. The position is quite different for the short term. Supplies can be rapidly created and the producers can recoup themselves during the war. But they may have considerable stocks on hand at the cessation of hostilities, when stocks from countries now cut off from trade may come on the market and create serious difficulties. Therefore it is suggested that the government should safeguard the position of those who have undertaken the cultivation of drugs, as is being done in other branches of agriculture. The committee considers that in the United Kingdom attention should be concentrated on the production of agar, dill, belladonna, Irish moss, colchicum, digitalis, ergot, male fern, liquorice root, hyoscyamus, peppermint, psyllium, sphagnum moss, stramonium, dandelion root and valerian. Arrangements have been made by the Ministry of Health to extend the areas of cultivation of certain extremely important drugs. The Royal Botanic Gardens have arranged with the National Federation of Women's Institutes to organize the collection of ten important herbs in each county, making a total of thirty herbs throughout the country. It is hoped to avoid the disappointment of the last war, when incorrect methods of collection and inadequate preparation for the market wasted much effort.

Bill to End the Trade in Secret Remedies

The trade in secret remedies has long been a scandal. Their sale is promoted by preposterous claims, often in the form of glaring advertisements, to cure all the common diseases, even those which are incurable. The unscrupulous venders prey on the fears of the uninformed and the credulous. Only a short time ago did the law prohibit the advertisement of remedies for cancer and venereal disease. The government has now introduced a bill, which has received a second reading in the House of Commons, extending the prohibition to remedies for Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxia, paralysis and tuberculosis. These diseases have been selected because, like venereal disease and cancer, they are all of a serious nature and are susceptible of alleviation, if not cure, by recognized methods of treatment and because it is dangerous to delay seeking treatment by resorting to quack remedies. The bill also puts an end to secret remedies by providing that medicines, except those made up for and supplied to a particular person on a prescription, shall bear on the wrapper or on the label a statement of their composition or active constituents. The bill also repeals the medicine stamp duties which were collected by requiring every secret remedy to bear a stamp, which had the unfortunate effect of inspiring ignorant persons with confidence in the nostrum, as they regarded the official stamp as a sort of guaranty by the government. The introduction of this bill at a time when the country is engaged in a great war is one more example of the calmness with which it faces the issue. What a contrast to the hysterical rage manifested in the preposterous fictions of enemy propaganda!

Miniature Radiography and Sputum Examination of Recruits

Miniature radiography has been adopted in the recruitment of men for the navy and air force, but lack of apparatus and of sufficient expert examiners and the fact that this examination would seriously delay the medical examination of the large number of men entering the army has prevented its wider use in Britain. However, Australia has been able to use it for its army. In the *British Medical Journal* of May 10, Major Douglas Galbraith has described the application of miniature radiography for routine chest examination of a large number of recruits. It was found that one in every hundred showed roentgenographic evidence of active or latent tuberculosis and one in every two hundred of active tuberculosis. In the same issue Major Reginald Webster has an article on "Bacteriological Examination Supplementing the Radiological Survey of the Australian Imperial Forces." He not only examined the sputum, when this was available, for acid fast bacilli but took cultures of every negative sputum and examined microscopically and by culture the gastric mucus from all in whom lung sputum could not be obtained. The number of men rejected or deferred by reason of x-ray evidence of tuberculosis in whom bacteriologic examination was undertaken was 271. Of these, 100 were shown to be actively discharging bacilli. In a group of 152 men with the roentgenogram regarded as indicating active pulmonary tuberculosis, 83 (54.6 per cent) positive bacteriologic findings were obtained. In 90 men designated as showing the lesions of old healed tuberculosis or inactive or doubtful tuberculosis the percentage of positives was 11.1. In a third group of 3 men with no sign of a tuberculous lesion in the lungs, who were sent for examination on other grounds, sputum or gastric culture proved positive in all. It is noteworthy that these researches were carried out on a section of the Australian population which had been found fit for military duty by a thorough clinical examination.

National Wheatmeal

In a letter in THE JOURNAL, May 10, page 2209, the ordering by the government of the production of standard flour of 85 per cent extraction from the wheat berry was reported. The object was to avoid the loss of nutritive ingredients which takes place in the 73 per cent extraction of white flour. The Ministry of Health has issued a circular to local authorities and hospital boards calling attention to the desirability on nutritional grounds of making available to patients and staffs of hospitals and insti-

tutions bread made from the national wheatmeal flour. It is pointed out that this flour contains the greater part of the germ of wheat, with some of the finer bran, but excludes the coarser. It thus contains not only most of the vitamin B_1 but also most of the remainder of the vitamin B complex, as well as valuable mineral elements, which are removed in the production of white flour. National wheatmeal flour is therefore of high nutritional value and is particularly valuable at times when there is restriction on the availability of other foods from which these vitamins and minerals could be obtained. Owing to the exclusion of the coarser bran, bread made from this flour should be readily tolerated by patients with digestive complaints who do not easily tolerate bread made from coarser brown or wholemeal flours.

BUDAPEST

(From Our Regular Correspondent)

July 14, 1941.

Allaying Pain on the Battlefield

Dr. Lippay-Almássy Artur, surgeon colonel in the Hungarian army, in a recent lecture emphasized that many soldiers at the moment of getting wounded, in the fervor of the fight, do not feel anything besides a small bruise. Their attention to their plight is called by oozing blood, by a feeling of suffocation or by sudden weakness. Even the laceration of a thick nerve plexus caused by a shot may not always induce pain. Also shock, collapse and unconsciousness are likely to suppress all sensation of pain. In the sanitary equipment of modern armies one finds besides morphine several more up to date anodynes a constituent of which is scopolamine. In the Hungarian army compound solution of ethylmorphine is official, containing ethylmorphine hydrochloride, morphine and scopolamine; there is also a combination of scopolamine, dihydro-oxycodeinone hydrochloride and ephetonin. In exceptional cases allaying of pain is contraindicated, says Dr. Lippay-Almássy; thus wounded soldiers suffering from shock or from unconsciousness following cerebral concussion should not be given anodynes even prophylactically because this may result in the paralysis of the respiratory center. The anesthetic administered should be of minimal poisoning effect, its chemical composition should not change on long storing, it should be easily conveyable, of small volume, and its preparation before use should be simple and quick. From the surgical point of view, its anesthetic action should be quick, without an intermediate excitatory state, its administration simple, and with the termination of the operation the patient shall wake without excitation. According to Lippay-Almássy, lumbar anesthesia is to be omitted on the recently wounded. Ethyl chloride narcosis is the method of choice both at and behind the front. Narcotizing with ether is simple, efficacious and, according to the latest investigations, can be administered also to gas poisoned soldiers. Its disadvantage is its low ignition, as it ignites at 34.5 C. (94 F.).

The Prognosis and Treatment of Quinine Poisoning

In view of the intensive campaign against malaria in the swamp districts all over the Near East countries of Europe, poisoning with quinine occurs more frequently now than it did formerly. In the literature one finds the description of but few cases in which the lethal issue was solely due to quinine, says Dr. Gyula Balázs. Even in these instances large doses, from 15 to 20 Gm., were taken at one time. But there are records stating that children and sick persons have died from even smaller quantities, from 1 to 2 Gm., administered for pneumonia and abdominal typhus. The question is, says Balázs, what role quinine and what role the sick organism played, the more so as in his practice patients have made a full and quick recovery after taking even 15 to 20 Gm. of quinine. Even the prognosis of visual troubles is good. In most cases in a few days, but sometimes after several weeks and even months, full visual acuity is likely to return. Out of 115 quinine poisoning cases in his clinic Balázs observed lasting impairment of vision in but 3 cases. In 1 of these the visual field was constricted and in the others there were central scotomas. According to his experience the lesion of the retina depends more on the individual tendency than on the quantity of quinine taken. As regards therapy, the first task is to remove the yet nonabsorbed quinine from the gastrointestinal tract by copious lavage, aperients containing magnesium sulfate and clysmas. One may administer also medicinal carbon. Then collapse and paralysis of the heart and respiration must be combated with caffeine, ephedrine, epinephrine and carbon dioxide inhalations. If there is a high grade psychic excitation or delirium, one of the morphine derivatives may be resorted to. To increase excretion the patient should be ordered to drink much tea. Cutaneous manifestations, pruritus and edema can be influenced by calcium. In visual troubles for the cessation of arterial cramps amyl nitrite inhalation may be tried, also intravenous injections of iodine. The visual disturbances heal almost spontaneously.

The Bee Experimental Station at Budakesz

Dr. Navratil Dezsö, lecturer to the Budapest university, late member of parliament, has begun to treat rheumatic cases at the bee experimental station at Budakesz, near the capital. This is the result of two years of experimental study of the therapeutic effect of the bee sting in rheumatic cases. Now the village is crowded with patients from near and far. The station is provided with sixteen bee families, which sting the patients. The bee toxin shows its effect within a relatively short time. There are many patients who were brought here on stretchers and now they are able to walk and even to mount stairs. This bee poison seems harmless and does not act deleteriously either on the heart or on the kidneys. It was also observed that the patients acquire a better facial expression; the cessation of pain may be only one of the causes of this. This favorable action has been observed in a large number of patients. The station is going to employ a biochemist to study the biochemistry of the process going on during the course of treatment.

Lecture Tour of Professor Benedek

The Belgrade, Sophia, Athens and Ankara universities invited Dr. Ladislaus Benedek, professor of neurology at the university of Budapest, to lecture. Benedek has just completed his tour of the Balkan capitals. In Belgrade he lectured on brain tumors in the physiologic institute of the university. In all capitals he lectured on different subjects.

Marriages

JOSEPH DRAKE ANDERSON, Franklin, Tenn., to Miss Anne Elizabeth Woodard of Spring Hill in July.

ROLAND ALFRED JEFFERSON, Milwaukee, to Mrs. Virginia Brooks Ott of Appleton, Wis., July 26.

AMBROSE E. WANAMAKER, Hamburg, Iowa, to Mrs. Annie Parkhurst of Billings, Mont., June 11.

ALOYSIUS J. HAVLIK, Tama, Iowa, to Miss Genevieve Houston of Marshalltown in Dunlap, June 21.

WILLIAM D. YAVORSKY to Miss Mary Virginia Jamesson, both of Cedar Rapids, Iowa, July 4.

SAMUEL PILCHMAN, Ladd, Ill., to Miss Adelyn Sylvia Baker of La Salle in Brooklyn, July 30.

THOMAS HOLT, Warrenton, N. C., to Miss Lela Manning of Bainbridge, Ga., July 19.

HAROLD R. WEIDNER to Miss Lucille V. Rapp, both of Coldwater, Mich., August 6.

HAROLD BERNARD LEVIN to Miss Sylvia Leah Meyer, both of Atlanta, Ga., July 19.

DARRELL A. BERRY, Fallon, Nev., to Miss Ida Wickland, June 20.

Deaths

Ludwig W. Kast ✠ New York; Deutsche Universität Medizinische Fakultät, Prague, Austria, 1903; president of the Josiah Macy Jr. Foundation; for many years member of the board of directors of the New York Post-Graduate Medical School and Hospital and from 1910 to 1926 professor of clinical medicine; past president of the American Gastro-Enterological Association; lieutenant colonel in the medical reserve corps of the United States Army; was decorated by the Belgian Order of the Crown and the Palmes académiques of the French Academy in honor of his medical researches; aged 64; died, August 14.

Francis Reynolds Haussling ✠ Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1901; fellow of the American College of Surgeons; served during the World War; past president of the Medical Society of New Jersey and the Essex County Medical Society; attending surgeon, Newark City and Newark Memorial hospitals; adjunct surgeon, Hospital of St. Barnabas; consulting surgeon, Presbyterian Hospital, Newark, and the Irvington (N. J.) General Hospital; aged 66; died, August 4, in Spring Lake.

Warren Horace Fairbanks, Freehold, N. J.; New York Homeopathic Medical College and Flower Hospital, New York, 1916; member of the Medical Society of New Jersey and the American College of Chest Physicians; past president of the Monmouth County Medical Society; fellow of the American College of Physicians; at one time a minister; medical director of the Allenwood Sanatorium and Monmouth County Hospital for Tuberculosis; was on the staff of the Fitkin Memorial Hospital, Neptune; aged 57; died, August 5.

Clement Levi Jones ✠ Springfield, Ohio; Johns Hopkins University School of Medicine, Baltimore, 1903; past president and secretary of the Clark County Medical Society; fellow of the American College of Physicians; at various times pathologist, Rickly Memorial Hospital, member of the medical staff and cardiologist, Springfield City Hospital, and director of the Springfield Clinical and Pathological Laboratory; aged 65; died, August 2, of coronary occlusion.

Edmund Russell Brush ✠ Zanesville, Ohio; Starling-Ohio Medical College, Columbus, 1909; member of the House of Delegates of the American Medical Association from 1926 to 1928, in 1930, 1931, 1934 and 1935 and from 1938 to 1940; fellow of the American College of Surgeons; past president and secretary of the Muskingum County Academy of Medicine; served during the World War; city health officer; aged 56; died, July 28, in the Cleveland Clinic of pneumonia.

Minot Flagg Davis, Cambridge, Mass.; University of the South Medical Department, Sewanee, Tenn., 1901; member of the Massachusetts Medical Society; formerly on the staffs of the Boston City Hospital and the Massachusetts Eye and Ear Infirmary, Boston; aged 78; died, July 26, in the Wiswall Sanatorium, Wellesley, of carcinoma of the rectum.

William Carter Wescott ✠ Atlantic City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; member of the American Roentgen Ray Society, Radiological Society of North America, Inc., and the American College of Radiology; on the staff of the Atlantic City Hospital; aged 72; died, July 26, of coronary thrombosis.

Claude William Walker ✠ Iron Mountain, Mich.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; fellow of the American College of Surgeons; served during the World War; on the staff of the Iron Mountain General Hospital; aged 65; died, July 18, of injuries received in an automobile accident.

Louis Lawrence Syman, Springfield, Ohio; Starling Medical College, Columbus, 1898; member of the Ohio State Medical Association; fellow of the American College of Physicians; veteran of the Spanish-American and World wars; aged 70; on the staff of the City Hospital, where he died, July 16, of heart disease.

Alfred Franklin Yohe, Leavenworth, Kan.; Rush Medical College, Chicago, 1888; Bellevue Hospital Medical College, New York, 1892; for many years prison physician for the United States Penitentiary; at one time a member of the board of education; aged 76; died, July 23, in the Cushing Memorial Hospital.

George Washington Vinyard, Jackson, Mo.; Missouri Medical College, St. Louis, 1875; member of the Missouri State Medical Association; past president and secretary of the Southeast Missouri Medical Association; formerly member of the school board and mayor; aged 91; died, July 2, of myocarditis.

Walter H. Smyth, Westmount, Que., Canada; McGill University Faculty of Medicine, Montreal, 1896; lieutenant colonel of the Canadian Army Medical Corps and member of the military examining board; aged 68; on the staff of the Montreal General Hospital, where he died, July 26.

Irenus Stewart Egan, Livingston, Mont.; Kansas City University of Physicians and Surgeons, Kansas City, Mo., 1924; member of the Alaska Territorial Medical Association; aged 49; died, July 22, in Rochester, Minn., of bronchopneumonia and empyema of the gallbladder.

Ethel May Dolinsky, New York; New York Medical College and Hospital for Women, New York, 1905; fellow of the American College of Surgeons; on the staff of the Flower and Fifth Avenue Hospitals; aged 65; died, June 27, of cerebral hemorrhage and arteriosclerosis.

Hugh Sanford Smith, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1890; L.R.C.P., Edinburgh, L.R.C.S., Edinburgh and L.R.F.P.S., Glasgow, 1893; served during the World War; aged 72; died, July 23, in the Toronto General Hospital.

Miles Parker Omohundro ✠ Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1922; member of the American Urological Association; aged 45; was found dead, July 28, of heart disease.

Willis Howes Van Der Wart, Schenectady, N. Y.; University and Bellevue Hospital Medical College, New York, 1913; member of the Medical Society of the State of New York; aged 55; died, July 16, in the Ellis Hospital.

William Henry Meddaugh, Port Hope, Mich.; Detroit College of Medicine, 1907; served during the World War; aged 59; died, July 21, in the Hubbard Memorial Hospital, Bad Axe, of sarcoma of the maxilla.

Alexander Green Touchstone, Meridian, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1917; served during the World War; aged 54; died, July 21, in Rush's Infirmary.

James Henry Strider, Tillar, Ark.; University of Nashville (Tenn.) Medical Department, 1879; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 84; died, July 14.

Alpheus Mahlon Shafer, Massillon, Ohio; Western Reserve University School of Medicine, Cleveland, 1917; member of the Ohio State Medical Association; aged 52; hanged himself, July 23.

Robert Lee Mitchell, Warrior, Ala.; Chattanooga (Tenn.) Medical College, 1894; member of the Medical Association of the State of Alabama; formerly mayor; aged 73; died, July 2.

Bruce Bruette Barber, Ashley, Ohio; Starling-Ohio Medical College, Columbus, 1911; for many years county health commissioner; aged 59; died, July 9, of coronary thrombosis.

Harold Romney Edwards, Montreal, Que., Canada; Hahnemann Medical College and Hospital of Philadelphia, 1897; served during the World War; aged 67; died, July 20.

Thomas J. Moss, New York; University of the City of New York Medical Department, 1893; member of the Medical Society of the State of New York; aged 77; died, July 25.

Charles H. Robertson ✠ Salem, Ore.; Missouri Medical College, St. Louis, 1893; fellow of the American College of Surgeons; aged 71; died, July 16, of cerebral embolism.

Livingston Byrns Sheppard ✠ Paintsville, Ky.; University of Tennessee College of Medicine, Memphis, 1931; formerly county health officer; aged 35; died, July 5, in Boston.

August Schachner, Louisville, Ky.; Louisville Medical College, 1888; fellow of the American College of Surgeons; aged 75; died, July 10, of hypertensive heart disease.

William Spencer Love ✠ Charleston, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; aged 58; died, July 17, of a malignancy of the left lung.

Edwin Stanton Lawrence, Des Moines, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1887; aged 79; died, July 26, of cerebral hemorrhage.

John Alexander Neblett ✠ Louisville, Ky.; University of Louisville School of Medicine, 1924; served during the World War; aged 45; died, July 7, of coronary occlusion.

Chauncey Thurston Shearer ✠ Columbus, Ohio; Chicago College of Medicine and Surgery, 1911; aged 56; died, July 25, in the White Cross Hospital of coronary thrombosis.

John Charles Storz, Luzerne, Pa.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; aged 73; died, July 5, of myocarditis.

B. Whit Sutton, Huntland, Tenn.; University of Tennessee Medical Department, Nashville, 1899; member of the Tennessee State Medical Association; aged 75; died, July 9.

Arthur Alfred Payne, Colonia Grutly, Argentina, South America; State University of Iowa College of Medicine, Iowa City, 1928; aged 41; died, June 22, of carcinoma.

Roy Charles Elmore ✠ Durant, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; aged 64; died, July 26, in Jackson of coronary thrombosis.

Duncan Charles Shields, Bernard, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor; 1895; aged 73; died, July 31, of acute nephritis.

Walter Marion Haggett, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1887; member of the Illinois State Medical Society; aged 83; died, July 17.

Myles Standish Record, Abington, Mass.; Tufts College Medical School, Boston, 1925; aged 40; was burned to death, July 25, when his summer cottage caught fire.

Roscoe Leland Barlow, Gary, Ind.; St. Louis University School of Medicine, 1917; served during the World War; aged 47; died, July 29, of cardiac decompensation.

Ernest Washburn Emery, Denver; Harvard Medical School, Boston, 1905; aged 71; died in July at St. Luke's Hospital, of diabetes mellitus and gangrene.

Frank Joseph Monaghan ✠ Oneonta, N. Y.; Long Island College Hospital, Brooklyn, 1894; formerly health commissioner of New York City; aged 75; died, July 26.

Nannie Cecilia Dunsmoor ✠ Los Angeles; University of Southern California College of Medicine, Los Angeles, 1900; aged 80; died, July 16, in Fontana, Calif.

C. M. Townsend, Raynham, N. C.; Medical Department of Tulane University of Louisiana, New Orleans, 1893; aged 75; died, July 12, in a hospital at Lumberton.

Herschel Victor Brunker, Casey, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; served during the World War; aged 53; died, July 7.

Carson Charles Faulkner, Margaretville, N. Y.; Baltimore University School of Medicine, 1897; postmaster; served during the World War; aged 67; died, July 22.

Philip Constant Goergen ✠ Chicago; Loyola University School of Medicine, Chicago, 1919; examining physician for the draft board; aged 56; died, July 2.

James Madison Neary ✠ Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1920; aged 51; died, July 10, of heart disease.

Mary R. McConahy, Evanston, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; aged 101; died, July 26, of arteriosclerosis.

Joseph Harris Ball, Cleveland; University of Michigan Homeopathic Medical School, Ann Arbor, 1898; aged 68; died, July 18, of carcinoma of the stomach.

Arthur Bernard Ossege ✠ Perrysburg, Ohio; St. Louis University School of Medicine, 1926; aged 39; died, July 10, in Toledo of valvular heart disease.

Gaven Crane Dyott, Eugene, Ore.; University of Oregon Medical School, Portland, 1920; aged 49; died, July 15, of acute coronary occlusion and myocarditis.

George Vaughan Poynor, South West City, Mo.; Missouri Medical College, St. Louis, 1888; aged 85; died, July 23, of carcinoma of the mouth and throat.

Edward Louis Blake, Brooklyn; Long Island College Hospital, Brooklyn, 1908; aged 57; died, June 12, in the Lutheran Hospital of cirrhosis of the liver.

Robert Joseph O'Donnell, Cincinnati; Medical College of Ohio, Cincinnati, 1899; aged 66; died, July 15, in St. Mary's Hospital of cerebral thrombosis.

John Arte Usher, Savannah, Ga.; Maryland Medical College, Baltimore, 1904; member of the Medical Association of Georgia; aged 65; died, July 15.

James Edward Bobbitt, Jonesboro, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; aged 62; died, July 13, of carcinoma of the prostate.

Bert Everett Lamb, Gardiner, Maine; Dartmouth Medical School, Hanover, N. H., 1891; formerly mayor; health officer; aged 77; died, July 28.

Clifford Pervines Fall ✠ Beatrice, Neb.; College of Physicians and Surgeons, Chicago, 1888; aged 78; died, July 26, of cerebral hemorrhage.

John Harrison Owens, Duncanville, Ala.; Memphis (Tenn.) Hospital Medical College, 1899; aged 67; died, July 1, of cerebral hemorrhage.

Amos Jones Mander, Bridgeton, N. J.; Medico-Chirurgical College of Philadelphia, 1905; aged 62; died, June 23, of chronic myocarditis.

Minnette Pratt Petrie, New York; University of Buffalo School of Medicine, 1900; aged 80; died, June 22, of thrombosis and arteriosclerosis.

A. L. Matthews, Florence, Ky.; Louisville Medical College, 1893; aged 73; died, July 7, of hypertensive cardiovascular renal disease.

Dwight Mackey, Hobart, Ind.; Chicago College of Medicine and Surgery, 1909; served during the World War; aged 57; died, July 16.

Sumner George Bush, Chelsea, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1896; aged 68; died, July 29.

John Edward Cannon, Celeste, Texas; Missouri Medical College, St. Louis, 1882; aged 83; died, July 15, of carcinoma of the stomach.

George W. Fisher, De Land, Fla.; Hospital College of Medicine, Louisville, Ky., 1882; aged 81; died, June 23, of arteriosclerosis.

Charles H. Hunt, Louisville, Ky.; Hospital College of Medicine, Louisville, 1897; died, July 17, in St. Anthony's Hospital of uremia.

Joseph M. Hodges, Boone, N. C.; Baltimore Medical College, 1904; formerly state senator; aged 75; died, July 18, of myocarditis.

Antonio Garcia Padilla, Brownsville, Texas; Escuela de Medicina de Nuevo Leon, Monterrey, Mexico, 1894; aged 71; died, July 27.

Robert Leland Westover, Okmulgee, Okla.; Medical College of Indiana, Indianapolis, 1898; aged 68; died, May 11, of myocarditis.

Charles Byron Kenton, Artesian, S. D.; Medical College of Indiana, Indianapolis, 1905; aged 60; died, May 3, of carcinoma of the liver.

John C. Sharrer, Francesville, Ind.; Kentucky School of Medicine, Louisville, 1880; aged 83; died, July 24, of coronary occlusion.

John Lawrence Smith ✠ Los Angeles; Rush Medical College, Chicago, 1901; aged 74; died, June 26, of coronary embolus.

John Johnston, Burgessville, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1906; aged 72; died, June 28.

Milton Kenneth Rosen ✠ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1939; aged 27; died, June 12.

Walter Lewis Scofield, Fort Pierce, Fla.; University of Vermont College of Medicine, Burlington, 1907; aged 58; died, July 17.

William Jay Logie, Brantford, Ont., Canada; Victoria University Medical Department, Coburg, 1886; aged 81; died, July 10.

Frank L. Gibbs, Chillicothe, Ohio; Pulte Medical College, Cincinnati, 1896; aged 70; died, July 9, in a local hospital of uremia.

John W. Lee, Tulsa, Okla.; Detroit College of Medicine, 1894; aged 68; was found dead, July 1, of a self-inflicted bullet wound.

Herbert Quillen Willis ✠ Costa Mesa, Calif.; Ensworth Medical College, St. Joseph, Mo., 1894; aged 73; died, July 11.

Claude Levi Edge, Crosbyton, Texas; Atlanta (Ga.) Medical College, 1915; aged 53; died, June 21, of strychnine poisoning.

Robert E. Dullam, Battle Creek, Mich.; Detroit College of Medicine, 1903; aged 67; died, July 12, of terminal sclerosis.

Hyman B. Shapiro, Chicago; Rush Medical College, Chicago, 1903; aged 63; died, June 11, of gastric hemorrhage.

Horace Blake Hannon, Chicago; College of Physicians and Surgeons of San Francisco, 1903; aged 66; died, August 8.

Charles Thomas Leach, Bland, Mo.; Hospital College of Medicine, Louisville, Ky., 1898; aged 71; died, May 5.

Gaines R. Thigpen, St. Marys, Ga.; Atlanta Medical College, 1893; aged 72; died, July 15.

Alexander McNamara, Lockport, N. Y.; University of Buffalo School of Medicine, 1887; aged 80; died, July 1.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have agreed with the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Air-Way Reducing Girdle.—The Ohio Truss Company, trading as Ohio Airway Surgical Company, Cincinnati, signed a stipulation with the Federal Trade Commission in September 1940 promising to desist from representing that the action of this device on the wearer is massage-like or that the girdle will massage the body of the wearer; that using it will cause one to reduce or will effect a definite reduction in weight or measurement, or result in the loss of fatty tissue; that the girdle is non-absorbent; that the possibility of cutaneous infection from excreted waste matter absorbed by a girdle is eliminated by wearing an "Air-Way Girdle."

Allay.—This is put out by Pickgan Labrofacts, Inc., New York. In June 1940 the concern stipulated with the Federal Trade Commission that it would cease representing through the use of such expressions as "pain banisher," "get rid of pain," "insure freedom from pain," "drives away pain," "kills pain," or in any other manner that its product terminates pain or has any effect on pain in excess of affording temporary relief; that it is safe for use, or that it affords a new method for relieving pain. The company further agreed to discontinue representations that "Allay" has any efficacy in preventing the development of colds, or is an effective remedy for colds, or that it acts or commences to act in three seconds after the tablets are taken. This stipulation superseded and modified a somewhat similar one that the Commission had accepted from the same concern in October 1937.

Anticalvez.—This is put out by one V. G. Fernandez, Chicago, trading as Wonder Laboratory. In May 1940 Fernandez signed a stipulation with the Federal Trade Commission promising to discontinue certain misrepresentations. Among these were that his product is capable of eliminating dandruff, stopping falling hair, giving to the hair the vigor and luster of youth, improving the hair or scalp, preventing baldness or gray hair and causing one to have an abundant growth of hair.

Aviola.—This is put out by a Frederick Hoffman, trading under the name Maxine Company, Fairfax, Okla. In April 1940 Hoffman stipulated with the Federal Trade Commission that he would cease representing his product as a preventive or cure for rectal ailments; that it is "Guaranteed under the Pure Food and Drugs Act"; that it has been examined or approved by the government, or that the latter guarantees that "Aviola" complies with the law.

Barker's XZMO—This is put out by one H. W. Barker, trading as Barker Chemical Co. and Barker Laboratories, Sparta, Wis. A stipulation signed with the Federal Trade Commission by Barker in July 1940 promised the discontinuance of certain advertising misrepresentations. Among these were that the product is a competent treatment for eczema, piles, athlete's foot, nerve disorders, weed poisoning or any other skin or flesh troubles; that it has any appreciable therapeutic value in excess of a mild antiseptic and astringent with no keratolytic or penetrating action; that it will destroy the cause of itching, or that the information furnished by him to sufferers of eczema, athlete's foot, piles or skin troubles is reliable. Barker also agreed to cease using the coined word "XZMO" or any other term that simulates the word "eczema."

Beatrice Mabie's Pore Cream.—This is put out by Beatrice Mabie, Inc., St. Louis, which in October 1940 signed a stipulation with the Federal Trade Commission agreeing to discontinue certain misrepresentations in its advertising. Among these were that this cream will clear the skin of blackheads or banish blackheads, remove blackheads permanently or have any effect on blackheads beyond tending to soften temporarily the sebum in the pores; that it will reduce or contract enlarged pores or is a competent treatment for enlarged pores; that it has any special ingredients or acts in a way different from competing products; that a single application will remove dust, dirt or makeup embedded in the pores for days or weeks or that blackheads or enlarged pores are due to faulty diet or to a cutaneous condition requiring daily correction. Beatrice Mabie, Inc., further agreed to cease and desist from representing, directly or indirectly, that it owns, operates or controls a laboratory.

Bilaphen Tablets.—Having advertised this product as enabling the user to say goodbye to a distressed feeling resulting from an upset stomach or to aid in relieving such condition (unless referring to the relief of that condition when due to constipation), or as a remedy that will restore the liver to normal functioning or that will cause normal or natural movements, the Victoria Chemical Company, Newark, N. J., in October 1940 promised the Federal Trade Commission to discontinue these misrepresentations.

Carolyn Nilson Cosmetics.—The Carolyn Nilson System of Beauty Culture, Detroit, is conducted by one Carolyn Nilson Dietrich. In October 1940 this person stipulated with the Federal Trade Commission that she would cease making certain misrepresentations in the sale of her cosmetics, put out in conjunction with a massage and gymnastics course. Among these misrepresentations were that her preparations have been endorsed or approved by physicians, Hollywood stars or leaders everywhere; that her hair tonic preparation or an eyelash preparation will stimulate or in any way cause the hair to grow and that her "Bust Developing Cream" and "Reducing Lotion" are effective for their respective purposes.

Concentrated Food Particle (Wheat Germ Oil).—In June 1940 Leonard J. Hartman, Brooklyn, promised the Federal Trade Commission that he would cease advertising that this product will prevent or overcome disease or afford an increase in health or energy, and is a competent treatment or effective remedy for certain ailments of women; that it will restore potency or is a competent treatment or effective remedy for sterility, unless the representation is limited to its aid in treating the condition when it is due to a vitamin E deficiency and it is further explained in direct connection therewith that sterility due to a vitamin E deficiency is an extremely rare occurrence.

Corn Stick.—Joseph Balassa, Newark, N. J., trading as Balassa Laboratories, signed a stipulation with the Federal Trade Commission in May 1940 agreeing to cease representing that this product will remove bunions or end or relieve the pain incident to them.

Delora Cosmetics.—These are put out by a Harold C. Breckenridge, Detroit, trading as the Quality Chemical Company, and include "Delora Alice Skin Lotion," "Delora Alice Fine Perfumes," "Flower of the Orient" and "LaFrance." In March 1940 Breckenridge promised the Federal Trade Commission to cease representing that the skin lotion has a healing action. Back in December 1936 Breckenridge had signed another stipulation with the Commission, promising to cease representing that his "Delora Alice Healthy Hair Shampoo" would make hair grow, that his "Nature's Blood Purifier and Laxative Tonic" would benefit the liver, stomach, kidneys or nerves, that his "Magic Cough Syrup" was a germ killer and met all requirements of the Pure Food and Drug Act and that his "Magic Hits The Spot Liniment" would relieve sprains, lumbago and rheumatism.

Hannon's Emergency Medicine.—This is a product of Hannon's Medicines, Inc., Brookhaven, Miss. In October 1940 the concern stipulated with the Federal Trade Commission that it would withdraw certain misrepresentations in the sale of its product. Among these were that the preparation has any value as a treatment for menstrual colic or asthma; that it is a competent remedy or effective treatment for croup, laryngitis and other ailments; that it is a remedy or heals or cures or has any therapeutic value other than that of a local counterirritant or a rubefacient; that it affords immediate, certain or instant relief from aches or pains or such relief within any specified period of time.

Hay-No.—This is put out by Morten Laboratories, Inc., Dallas, Texas, formerly operating under the name Hay-No Laboratories, Inc. In May 1940 the concern entered into a stipulation with the Federal Trade Commission promising to discontinue the following misrepresentations: that "Hay-No" or any other preparation of similar ingredients or properties, sold under that or any other name, is a competent remedy or effective treatment for hay fever, or that it has any therapeutic value in excess of affording symptomatic relief for the disease, or that the results to be achieved by the use of the product in the treatment of sinus irritations, head colds, air passages clogged by colds, distress of nose-blowing and sneezing, stuffiness or other symptomatic conditions, are amazing, wondrous or quick or that the product is a discovery. Two months later (July 1940) the Ferguson Company, Inc., Dallas, Texas, which apparently is an advertising agency, also signed a similar stipulation with the Federal Trade Commission.

Hobo Medicine.—The Hobo Medicine Company, Beaumont, Texas, which puts this out, signed a stipulation with the Federal Trade Commission in May 1940 agreeing to discontinue the following misrepresentations: that the preparation is a competent treatment for kidney or bladder disorders, is an aid to restoring normal health to those suffering from such disorders or will relieve or aid in correcting them; will help cleanse or remove from the system or blood stream excessive poisons, irritating acid or dangerous poisonous wastes, have any effect on the blood stream or is an aid to lovelier skin, and that men and women have been aided to better health by its use. Another government agency, the Food and Drug Administration, has at different times taken action against the Hobo Medicine Company because of false and fraudulent claims on the labels of its "Hobo Kidney and Bladder Remedy." One of the earliest of these cases was abstracted in THE JOURNAL, July 16, 1921.

Mag-Net-O-Balm.—This nostrum was represented in the advertising to be, among other things, a remedy or competent treatment for varicose veins or leg swellings or, alone or in connection with the application of heat, rubbing or exercise, a competent method for treating the pains of sciatica, rheumatism, lumbago, lame back, stiff neck, headache and some other disorders. In May 1940 Samuel Cohen, doing business as the S. C. Sales Company, Baltimore, promised the Federal Trade Commission that he would discontinue these and other misrepresentations. In this connection it is interesting to note that three years earlier (July 1937) the Post Office Department had debarred from the mails a concern run by Samuel Cohen of Baltimore under the names Gerald's Balm, Inc., Co-Operative Balm Co. and Co-Operative Laboratories, on the ground that "Gerald's Balm," the product it was selling by mail as an alleged rupture cure, was a fraud. This case was dealt with in THE JOURNAL April 9, 1938, page 1208. In May 1938 the Post Office Department issued a supplementary fraud order to cover the new names, Magneto Balm Co. and Magneto Balm Corporation, which Cohen had adopted, apparently with the idea of evading the original fraud order.

Marshall's Arch Supporters.—These devices were sold by Adam, Frank and Rudolph Marshall, trading as A. Marshall and Sons, Newark, N. J. In August 1940 these persons signed a stipulation with the Federal Trade Commission in which they agreed to discontinue certain misrepresentations in the sale of their arch supporters. Among these were that the use of the devices will permanently end foot troubles, remove calluses regardless of their nature or, unqualifiedly, assure instant and permanent relief in cases of weak arches; that the supporters are made to order, that is, fashioned from a positive cast made from a negative impression of the individual customer's foot through the use of some plastic material; that they are or will remain sanitary when used for the purposes for which they are intended or that shoes with insoles padded haphazardly, exercises and treatments are only temporary, impractical and expensive substitutes.

Marvan Dermopathic Salve.—In May 1940 the Marvan Laboratory, Inc., New York, promised the Federal Trade Commission that it would discontinue the following misrepresentations in the promotion of this product: that it is an effective remedy or competent treatment for eczema, itching and other cutaneous disorders or has any value in the treatment of them aside from offering temporary relief, or that the concern conducts or operates a laboratory when such is not a fact.

Milt's Num-O-Col Ointment.—In May 1940 the Num-O-Col Company, Inc., Oklahoma City, promised the Federal Trade Commission to cease advertising that its product is an effective treatment for pneumonia, influenza or common colds or that it is a competent remedy for sore throat or rheumatism, unless the representation is limited to such relief of symptoms of these conditions as may be afforded by its counterirritant properties.

Pinkston's Corn and Callus Remover.—This and "Pinkston's Bunion Reducer" are put out by a Henry J. Pinkston of Chicago, trading as the Pinkston Laboratories. In August 1940 Pinkston signed a stipulation in which he promised the Federal Trade Commission that he would discontinue some misrepresentations in his advertising. Among these were that the "Corn and Callus Remover" is one of the greatest discoveries of modern times or, in fact, a discovery at all; that it will remove corns or calluses by the roots or that these do have roots. Further, he promised to cease representing that his "Bunion Reducer" will do more than remove the pain caused by inflammation of the skin over the bunion and that he would cease using the word "Reducer" as a part of the trade name of his product, or in any other manner representing that it will reduce bunions.

Peerless Rheumatism Remedy.—In October 1940 J. H. Dornheggen, trading as the J. H. Dornheggen Medicine Company, Cincinnati, promised the Federal Trade Commission that he would discontinue certain misrepresentations in the sale of this product. Among these were the use of the word "Remedy" or other words of similar import or the implication that the product is an effective treatment for rheumatism or has any therapeutic value in such treatment in excess of affording temporary relief for the symptoms in cases of rheumatoid arthritis; that it is a competent preparation for arthritis, neuritis, sciatica, lumbago, neuralgia or "Rheumatic Pains of the Kidneys"; that it has any therapeutic value in the treatment of these ailments in excess of affording temporary symptomatic relief; that it prevents relapses or recurrences of rheumatic pains, or that the preparation is a discovery.

Perma Tonic.—The Katz Drug Company, Kansas City, Mo., promised the Federal Trade Commission in June 1940 to discontinue some advertising misrepresentations in the sale of this nostrum. Among these were that this so-called tonic is a health builder, unless it is explained in direct connection therewith that "Perma Tonic" of itself does not build health; that the system needs the ingredients contained in the product and that the preparation is a competent treatment or effective remedy for headaches or biliousness, unless limited to temporary relief of these conditions when they are due to constipation, and for constipation, unless limited to temporary relief. The company further promised that it would thereafter describe its preparation as a "Gastric Tonic" instead of merely as a "Tonic."

Physicians Formula Cosmetics, Inc., Products.—These are put out by the Los Angeles concern named here. In a stipulation that the company signed in September 1940 it promised the Federal Trade Commission to discontinue the use of the letters "Rx" or any other letters, signs or symbols which might give the impression that the products in question are in fact medicinal ones; that the "cholesterin" or any other ingredient in its cosmetic preparations restores or replaces or has the capacity to restore or replace natural oils in the skin or that it effectively combats or prevents crow's-feet, wrinkles or dry skin by means of oils applied to the skin or in any other manner; that the ingredients in its products penetrate the skin deeply or effectively; that its "Cleansing Cream" removes every particle of makeup, grime and dirt; or that its "Facial Masque" or its product heretofore designated "Tissue Cream" can be depended on to clear up blackheads, whiteheads or enlarged pores or to keep the skin youthful or free from lines.

Silver Pine Hair Tonic.—Henry Charambura, trading as Silver Pine Manufacturing Company, New York, promised the Federal Trade Commission in September 1940 to discontinue certain misrepresentations in his advertising of this "tonic." Among them were that the stuff retards or stops falling hair, develops healthy scalps, revitalizes the scalp, grows hair or eliminates or destroys dandruff. He also stipulated that he would desist from using the word "Tonic" alone or in connection with other words to describe any preparation which does not contain ingredients capable of stimulating scalp circulation by means of a rubefacient action. An echo of this case was noted in December 1940 when an advertising agency, Dundes and Frank, Inc., New York, also signed a similar stipulation.

Skin Food.—This is put out by the Alexandra de Markoff Sales Corporation, New York. In May 1940 this concern stipulated with the Federal Trade Commission that it would cease using the words "Skin Food" or others of similar meaning to designate a product which does not serve as a food or nourishment for the human skin or tissues. The company further promised to cease representing that its preparation, when applied to the skin, is absorbed by the skin with the result that the skin is fed or nourished or otherwise therapeutically benefited by absorption of the product, or that its products will erase or remove lines or wrinkles from the skin, build up the tissues, remold the face or restore or perpetuate youthful or firm contours to the face or throat.

Smith's Instant Hair Grower, Instant Hair Grower Special and Instant Tetter Salve and Scalp Cure.—These are put out by one Ada G. Smith, trading as Smith Manufacturing Company, Fayetteville, N. C., who in July 1940 stipulated with the Federal Trade Commission that she would discontinue certain advertising misrepresentations. Among these were that her two "hair grower" products grow new hair or increase present hair from 1 to 3 inches per month, or grow hair on any bald head or temple in three weeks or less where the roots are living. She also promised to cease representing that "Smith's Instant Tetter Salve and Scalp Cure" is a competent remedy or an effective treatment for dry scalp, tetter, eczema, dandruff, falling hair or other scalp diseases; heals sores or cutaneous diseases or would do more than temporarily relieve the itching that may be associated with certain cutaneous diseases and promote the healing of raw surfaces. Ada G. Smith also agreed to discontinue using the word "Cure" as part of the trade name of "Smith's Instant Tetter Salve and Scalp Cure," and the word "Grower" as part of the trade names "Smith's Instant Hair Grower' 'and "Smith's Instant Hair Grower Special."

Tyson's Products.—These preparations, put out by Tyson and Company, Inc., Paris, Tenn., include "J & T Tried and True Vegetable Compound" and a number of cosmetics. In August 1940 the Federal Trade Commission got the concern to sign a stipulation agreeing to discontinue certain misrepresentations in connection with the sale of these. Among them were that the "Vegetable Compound" is a dependable or competent remedy for women's ailments, nervousness or malnutrition, or that it is scientifically compounded; that any one of their "La Dainty" products, including "Hair Dressing & Grower," "Special Hair Grower," "Temple Grower," "Pressing Compound," "Quinine Pomade" and "Sheik Cream," makes hair natural, restores natural color to the hair, prevents baldness, overcomes deficiencies of the skin and scalp or eliminates the cause of dandruff. The concern also promised to cease representing that its "La Dainty Cold Cream," "Mme. Carue Tissue Cream," "Mme. Carue Cleansing Creme," "La Dainty Lucky Lovin' Cream," "Tyson's Ideal Bleaching Creme," "La Dainty Vanishing Cream" or any similar preparation is a skin food or skin invigorator or makes skin beautiful or lighter. Further, it was promised that the advertising would cease representing that "La Dainty Bleaching Ointment" gives youthful beauty and glow to the skin; that "La Dainty Beauty Bar" nourishes and stimulates the skin or that "La Dainty Special Face Soap" will cause skin to become young looking.

Vim Herb.—This was a product of A. P. Durham, trading as Herb Products Company, Anderson, S. C. In August 1940 Durham signed a stipulation with the Federal Trade Commission in which he promised to cease representing that "Vim Herb" will strengthen or build up the system, rid the system of poisons, completely cleanse the intestinal walls or act as a tonic for the blood; that it will benefit every one, relieve pain, clear the skin of eruptions or afford immediate, lasting or positive relief from any disease, disorder or ailment. Durham also promised to desist from representing that his preparation is a tonic; that it has benefited thousands or that the preparation is harmless, without at the same time clearly indicating that its use may be injurious when there are present acute inflammatory conditions of the gastrointestinal tract. In 1937 another government agency, the Food and Drug Administration, had taken action against A. P. Durham for selling "Lifsey's Vim Herb," apparently the same thing as Vim Herb, under fraudulent claims as an alleged cure for disorders of the blood, liver, kidneys and some other things. Government chemists reported that it consisted of plant extractives and one or more emodin-bearing drugs.

Wilhide Exhaler.—According to the advertising of Harold Wells Turner, trading as Health Culture Company, New York, this device would make one healthy and a brief use of it would give one the exhilarating effect of a cleaner blood stream. It was supposed to be more effective than other known devices for strengthening the lungs and was represented to add power to the voice and promote one's ability to resist diseases. In September 1940 the Federal Trade Commission prevailed on Turner to sign a stipulation that he would discontinue these representations. He further agreed that he would cease representing that the health of persons has been restored or benefited by the use of uncooked foods, as outlined in his book "Uncooked Foods"; that many cases of increased strength or vitality have resulted from a strictly vegetarian regimen; that the book called "No Animal Food" contains information which, if followed, enables a person to increase his strength or vitality, and that reading and putting into effect the principles expressed in "The Enlightened Life" will make one physically regenerated or healthy, or will enable one to live a long life. Earlier (September 1937) Turner had signed a stipulation promising the Federal Trade Commission that he would no longer represent that his "Dr. Wright's Irrigation Outfit" would keep the inside of the body clean and that failure to do so would cause numerous diseases and ailments; that the use of this irrigating device would cure those suffering from tuberculosis, rheumatism, catarrh and some other things, and that it would abort mental attacks in cases of incipient insanity.

Correspondence

HYPERSENSITIVITY TO THIAMINE

To the Editor:—In making a report on a patient with symptoms suggesting sensitivity to thiamine hydrochloride (THE JOURNAL, July 19, p. 176) Laws stated that an intradermal test made with a commercial preparation of thiamine resulted in the formation of a large urticarial wheal, that thiamine given parenterally was capable of sensitizing human beings and that "it seems advisable to make intradermal tests with thiamine hydrochloride before administering it, particularly to patients who previously have received thiamine." Unfortunately, no mention was made of the strength of the commercial preparation used in making the intradermal test.

While I am in entire agreement with Laws as to the possible development of human hypersensitivity to thiamine, I have pointed out in an article published in the July issue of the *Journal of Allergy* (Hypersensitivity to Thiamine Chloride, with a Note on Hypersensitivity to Pyridoxine Hydrochloride) that the significance of wheal formation following intracutaneous injection of thiamine is to some extent dependent on the strength of the preparation used. Two patients with symptoms of thiamine hypersensitivity reacted with wheal formation following the intracutaneous injection of 0.05 cc. of a commercial preparation of thiamine hydrochloride containing 50 mg. per cubic centimeter, but so also did 5 control subjects. However, when intracutaneous injections were made with 0.03 cc. of a preparation containing only 5 mg. per cubic centimeter, the control subjects showed no reaction although the hypersensitive patients again showed wheal formation.

On the basis of these observations it seems likely that intracutaneous testing with thiamine preparations containing in the vicinity of 50 mg. per cubic centimeter would result in many nonspecific reactions. If it is desired to use intradermal tests for the discovery of patients who have become hypersensitive to thiamine, more dilute preparations, containing probably not more than 5 mg. per cubic centimeter, should be used.

MERRITT H. STILES, M.D., Philadelphia.

RODENT CONTROL AND TRICHINOSIS

To the Editor:—There appeared in THE JOURNAL, June 28, page 2855, an editorial discussing progress in the control of trichinosis with particular reference to the value of rodent control in reducing the incidence of infection with Trichinella spiralis among garbage-fed swine. The difference between the observations of Hobmaier and Geiger and those of McNaught and Zapata formed the basis for the statement that "rodent control apparently is a statistically verifiable method of reducing trichinosis percentage in garbage-fed swine."

The California Department of Public Health, cooperating with the United States Public Health Service, has examined 261 garbage-fed swine from the same area. These examinations were conducted under the supervision of Dr. K. B. Kerr as part of the statewide survey of the trichinosis problem. Of these, 13.8 per cent were found infected with Trichinella, an incidence comparable to that found by Hobmaier and Geiger previous to the institution of rodent control on these ranches. Our examinations were made during the past sixteen months and after the rodent control program on these ranches had been in effect for at least two years. Furthermore, the examination of 71 Norway rats from four of these ranches has revealed only 11.8 per cent infected with Trichinella—an incidence which is lower than that found in the hogs examined. Our evidence, therefore, does not support the thesis that rodent control is an effective method of reducing the incidence of infection with Trichinella in garbage-fed swine.

In a personal communication Dr. James B. McNaught stated that in his opinion a rodent control program would not materially reduce the incidence of Trichinella in garbage-fed swine. I believe that the lower incidence found by McNaught and Zapata must be largely related to factors other than a rodent control program.

BERTRAM P. BROWN, M.D., Sacramento, Calif.
Director of Public Health, Department of Public Health, State of California.

ELECTRON MICROSCOPE

To the Editor:—May I add a comment to the interesting and important question of examination of tissue with the electron microscope?

It is important always to have in mind that any change in the water content away from the normal of cells or tissues results in a change in their internal structure. In the study reported by Seymour and Benmosche (THE JOURNAL, May 31, p. 2489) the cells examined had been in distilled water, a medium not iso-osmotic with the normal fluid surrounding of any body cells. Immersion in distilled water would result in an imbibition swelling, which would alter the physical cell structure considerably from its living condition. This is equally true of most technical methods, whether they involve drying, boiling or freezing or any means that alters normal water relations. Until some method can be devised for examining cells or tissues in an accurately iso-osmotic medium, interpretation of the microscopic picture will necessarily rest on artefact.

A. E. TAFT, M.D., Bryn Mawr, Pa.

DEATH FROM EMBOLISM AFTER INJECTION OF VARICOSE VEINS

To the Editor:—The article entitled "Death from Pulmonary Embolism Following the Injection of Varicose Veins" (THE JOURNAL, August 2, p. 347) requires comment. Nunn and Harrison draw attention to a mortality from pulmonary embolism following what they term "routine injection treatment" for varicose veins. From time to time I have emphasized in the literature the dangers of so-called routine treatment in such cases, but evidently these warnings have gone unheeded. The authors are apparently unable to explain the fatality after having carefully studied the case and performed a detailed autopsy.

After reading this report in THE JOURNAL, I find the following significant points in the history: The patient was treated with 2 cc. of sodium morrhuate as the first injection. The authors state that there was no decided reaction after this treatment and a satisfactory thrombosis followed. Yet six weeks later, on admission to the hospital, which was two days before death, physical examination disclosed an indurated area 8 by 3 cm. surrounding a thrombosed segment of the vein in the right calf. The authors call this a "chemical phlebitis."

Such a reaction six weeks after the initial injection is unusual and probably points to the existence of an unrecognized latent phlebitis. I have previously emphasized in the literature the frequency of this latent condition and have stressed the inadvisability of giving a full dose of morrhuate as the first injection in any case of varicose veins. De Takats was the first one to emphasize the frequent occurrence of latent infection in varicosities, but this lesson has still not been absorbed by the medical profession.

The authors report that there was no decided reaction after the initial treatment but call attention to the large indurated area that was found six weeks later. This sounds like a typical delayed reaction following injection in phlebitis. As I have pointed out previously (The Treatment of Phlebitis in Varicose

Veins, *Lancet* **1**:944 [April 25] 1936), this delay corresponds to the incubation period of the bacteria in the wall of the vein. These cases require a different injection technic, especially at the outset. Some of the rules to be followed are:

1. Never give a full dose of any sclerosing agent as an initial injection in any case of varicose veins.

2. Always keep in mind the possibility of the presence of latent or subacute phlebitis in any case of varicose veins.

3. Test for the presence of such phlebitis by provocative mild injections of invert sugar and by the use of the sedimentation rate.

I feel that these sporadic cases of pulmonary embolus can be kept at a minimum by faithful adherence to these warnings.

H. I. BIEGELEISEN, M.D., New York.
Chief, Varicose Vein Clinic, Beth David Hospital.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, September 6, page 883.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: * Phoenix, Oct. 7-8. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * *Medical.* Little Rock, Nov. 6-7. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 1. *Written.* Sacramento, Oct. 20-23. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: * *Examination.* Denver, Oct. 7. *Endorsement.* Denver, Oct. 8-10. Sec., Dr. George R. Buck, 831 Republic Bldg., Denver.

CONNECTICUT: *Medical. Examination.* Hartford, Nov. 11-12. *Endorsement.* Hartford, Nov. 25. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, Nov. 11-12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 10-11. Sec., Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 24-25. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 14-15. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 12-15. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO: Boise, Oct. 7. Dir., Bureau of Occupational License, Mr. Walter Curtis, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 14-16. Supt. of Registration, Mr. Lucien A. File, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, Sept. 23-24. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 8-10. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 129 State St., Portland.

MARYLAND: *Medical.* Baltimore, Dec. 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 9-10. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 4-7. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: * Lansing, Oct. 15-17. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Oct. 21-23. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 29-31. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 6-8. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: *Reciprocity with oral examination,* Nov. 3. Final date for filing application is Oct. 20. Sec., Dr. Fred M. Anderson, 315 N. Carson St., Carson City.

NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 15-18. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, State Education Department, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Dec. 10. Sec., Dr. James D. Osborn, Jr., Frederick.

PENNSYLVANIA: Philadelphia, January. Acting Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, Oct. 2-3. Sec., Division of Examiners, Dr. Robert M. Lord, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 10-11. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 13-14. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TEXAS: Austin, Nov. 17-19. Sec., Dr. T. J. Crowe, 918 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Nov. 17-19. Sec., Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 6-7. Sec., Dr. M. C. Keith, State Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Sept. 16. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

CONNECTICUT: Oct. 11. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 20-21. Sec., Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: DeLand, Nov. 1. Final date for filing application is Oct. 17. Sec., Professor J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, Oct. 14. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Oct. 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 7-8. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Nov. 1. Final date for filing application is Oct. 15. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Nov. 19. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, Sept. 20. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

California February Report

The Board of Medical Examiners of the State of California reports the written examination for medical licensure held at Los Angeles, Feb. 25-27, 1941. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Seventy-two candidates were examined, 66 of whom passed and 6 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists	(1940), 83.2,		86.6
Stanford University School of Medicine	(1940)		81.9
University of California Medical School	(1940) 86.4,		87.2
University of Southern California School of Medicine	(1938)		88.1, (1940) 79.2, 81.2, 82.2, 87
University of Colorado School of Medicine	(1940)		84.4
George Washington University School of Medicine	(1940)		86.3
Georgetown University School of Medicine	(1940)		84.1
Chicago Medical School	(1928)		80.7
Northwestern University Medical School	(1940)		81.6*
University of Chicago, The School of Medicine	(1940)		82.4
University of Illinois College of Medicine	(1940) 77.4,		84.4†
Indiana University School of Medicine	(1939)		80.3
State University of Iowa College of Medicine	(1940)		80
University of Kansas School of Medicine	(1940) 78.6,		85.3
University of Louisville School of Medicine	(1940)		81.2
Johns Hopkins University School of Medicine	(1934)		82.7, (1939) 82
Harvard Medical School	(1939)		86
University of Michigan Medical School	(1939) 85, (1940)		84.3
St. Louis University School of Medicine	(1940)		84.2
Creighton University School of Medicine	(1938)		79, (1940) 79, 79.1, 81.3, 82.4
University of Nebraska College of Medicine	(1940)		76.4
University of Oklahoma School of Medicine	(1940)		85
University of Oregon Medical School	(1939) 84.7, (1940)		83
Jefferson Medical College of Philadelphia	(1940)		81.6
Temple University School of Medicine	(1940)		83
University of Tennessee College of Medicine	(1940)		83.3
Baylor University College of Medicine	(1940) 81.1,		82.6
University of Texas Faculty of Medicine	(1939)		86.6
Medical College of Virginia	(1938)		83.1
University of Wisconsin Medical School	(1940) 80.9,		84.2

University of Toronto Faculty of Medicine.....(1939) (1940) 82.9, 84	83.2,
McGill University Faculty of Medicine.....(1927) (1939) 81.9, 83.6, (1940) 81.2, 85	76.5,
Medizinische Fakultät der Universität Wein.....(1936)	77.4, 78.1
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau .....(1917)	76.9
Universität Heidelberg Medizinische Fakultät.....(1914) (1931) 76.9	76.2,
Queen's University Faculty of Medicine, Belfast.....(1929) (1937) 82.3	88,
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia .....(1932)	76.8
Universidad Nacional Facultad de Medicina, México...(1939)	78.2
Rijks-Universiteit te Groningen Medische Faculteit....(1921)	77.1
University of Edinburgh Faculty of Medicine.....(1934)	87.6

School	FAILED	Year Grad.
College of Medical Evangelists		(1940)
Creighton University School of Medicine		(1940, 2)
Universita Karlova Fakulta Lékařská, Praha		(1936)
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn		(1927)
Universidade de Lisboa Faculdade de Medicina		(1938)

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

† This applicant has completed four years' medical work and will receive the M.D. degree on completion of internship.

South Carolina June Report

The State Board of Medical Examiners of South Carolina reports the written examination for medical licensure held at Columbia, June 23-25, 1941. The examination covered 17 subjects and included 51 questions. An average of 75 per cent was required to pass. Forty-two candidates were examined, all of whom passed. Eight physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1940)	82.9
Emory University School of Medicine		(1940)	76.3
Tulane University of Louisiana School of Medicine		(1941)	79.3, 85.3
Jefferson Medical College of Philadelphia		(1941)	85.4
Medical College of the State of South Carolina		(1941)	77.6
77.6, 77.9, 79.1, 80.3, 80.3, 80.4, 80.6, 81, 81.8, 82.8, 82.9, 83.8, 83.9, 84, 84, 84.1, 84.3, 84.4, 84.4, 84.6, 84.6, 84.9, 85.1, 85.1, 85.4, 85.4, 85.5, 85.6, 85.6, 85.8, 86.3, 86.8, 86.8, 87.1, 87.6, 88.1			

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1927)	Georgia
Tulane University of Louisiana School of Medicine (1940)		(1939)	Louisiana North Carolina
Ohio State University College of Medicine		(1923)	Ohio
Jefferson Medical College of Philadelphia		(1937)	Penna.
Meharry Medical College		(1939)	Tennessee
University of Tennessee College of Medicine		(1939)	Tennessee
University of Virginia Department of Medicine		(1929)	Virginia

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Sales Taxes: Applicability of Illinois Retailers' Occupation Tax Act to Sales of Medicines to Physicians and Hospitals.—The Retailers' Occupation Tax Act of Illinois (Ill. Rev. Stat. 1939, c. 120, sec. 440 et seq.) imposes a tax on the sale of tangible personal property for use or consumption but not for resale. Pursuant to a regulation adopted by it in 1933, purporting to make the sale of drugs and medicines to physicians, surgeons and hospitals amenable to the tax imposed by the act, the Illinois Department of Finance sought to recover an alleged tax deficiency from the defendant for the sale of medicines and pharmaceutical preparations to physicians, hospitals and sanatoriums. The circuit court, Cook County, in effect, held in favor of the defendant, and the department appealed to the Supreme Court of Illinois.

The defendant contended that sales of drugs and pharmaceutical preparations to physicians and hospitals were not sales for use or consumption within the meaning of the Retailers' Occupation Tax Act. The act, said the Supreme Court, imposes a tax on persons engaged in the business of selling tangible personal property for *use* or *consumption* and not for resale. "Use" and "consumption" as so used must be interpreted in their usual and popular meaning, i. e. "destruction by use" and "long-continued possession and employment of a thing to the purpose for which it is adapted," respectively. The purchasers from the defendant employed the subject matter of the sales in the treatment of their patients. They were thus in the same position as optometrists purchasing optical supplies, which this court in *American Optical Company* v. *Nudelman*, 370 Ill. 627, 19 N. E. (2d) 582 held were not the ultimate consumers of the medicines and pharmaceutical preparations and hence sales to such purchasers were not subject to tax imposed by the act.

The Supreme Court also held that a regulation subjecting such sales to the taxes imposed by the act was invalid, since it extended the act by implication beyond the clear import of its language. Taxing laws, said the court, should be strictly construed and should be resolved in favor of the taxpayer in all cases of doubtful meaning. If the act was inadequate it should be changed by the legislature, not by a regulation of a governmental agency.[1] The judgment of the circuit court in favor of the defendant was therefore affirmed.—*P. H. Mallen Co., Inc., v. Department of Finance, 25 N. E. (2d) 43 (Ill., 1940).*

1. Probably as a result of this decision, the Illinois sales tax act was so amended this year as to subject such sales to the tax imposed by the act.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 19-23. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.

American Academy of Pediatrics, Boston, Oct. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.

American College of Surgeons, Boston, Nov. 3-7. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.

American Hospital Association, Atlantic City, N. J., Sept. 15-19. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Sept. 23-26. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.

Associated Anesthetists of the United States and Canada, Boston, Nov. 3-7. Dr. C. J. Wells, 1932 S. Salina St., Syracuse, N. Y., Secretary.

Association of Military Surgeons of the United States, Louisville, Ky., Oct. 29-Nov. 1. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 2-4. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.

Clinical Orthopaedic Society, Cleveland and Akron, Ohio, Oct. 3-4. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.

Colorado State Medical Society, Estes Park, Sept. 17-20. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, Oct. 7-8. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.

Indiana State Medical Association, Indianapolis, Sept. 23-25. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Kentucky State Medical Association, Louisville, Sept. 29-Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 16-19. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.

Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Nevada State Medical Association, Elko, Sept. 26-27. Dr. Horace J. Brown, P. O. Box 698, Reno, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 27-31. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Tri-State Medical Society of Texas, Louisiana and Arkansas, El Dorado, Ark., Sept. 23-24. Dr. William Hibbits, 209 Pine St., Texarkana, Tex., Secretary.

Vermont State Medical Society, Burlington, Oct. 2-3. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.

Virginia, Medical Society of, Virginia Beach, Oct. 6-8. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

40:427-580 (Dec.) 1940

Necrosis and Sarcogenesis. W. H. Woglom, New York.—p. 429.
Prevention of Spontaneous Mammary Cancer in Mice by Anterior Pituitary Hormone. W. Cramer, St. Louis.—p. 431.
Lymphoepithelioma of Parotid Gland. M. J. Fein, New York.—p. 434.
*Triple Primary Malignancy. A. L. Shapiro and H. Bolker, New York.—p. 441.
Acute Myelogenous Leukemia. J. C. Walsh, Schenectady, N. Y., and E. M. Medlar, Mount McGregor, N. Y.—p. 447.
Malignant Variant of Cystosarcoma Phyllodes. J. W. White, Scranton, Pa.—p. 458.
Fibrosarcoma of Plantar Tissues. N. C. Collins, Elgin, Ill., and W. E. Anspach, Chicago.—p. 465.
Giant Pigmented Nevus with Malignant Transformation. H. R. Fishback, Chicago.—p. 471.
Arrhenoblastoma of Ovary. A. E. Kanter and A. H. Klawans, Chicago.—p. 474.
Hemangioblastoma of Adrenal. M. E. Marten and L. M. Meyer, Brooklyn.—p. 485.

Triple Primary Malignant Growths.—Shapiro and Bolker describe a case of coexistent triple primary malignant neoplasms not previously described in the literature. Each of the three lesions demonstrated the classic picture of a characteristic neoplasm of the structure involved, namely lymphosarcoma of the right inguinal region, clear cell adenocarcinoma of the right kidney and papillary adenocarcinoma of the pelvic colon. No distant metastases to viscera were observed from any of the tumors, despite the clearcut malignant picture and gross local invasiveness. A benign polyp of the colon and two lipomas of the forehead were also present in the same patient.

American J. Digestive Diseases, Huntington, Ind.

8:197-236 (June) 1941

Study of Motility of Human Colon: Explanation of Dyssynergia of Colon or of "Unstable Colon." H. F. Adler, A. J. Atkinson and A. C. Ivy, Chicago.—p. 197.
Review of English Literature on Diseases of Esophagus for 1940. P. P. Vinson, Richmond, Va.—p. 202.
*Clinical Evaluation of Gastritis. C. M. Jones, Boston.—p. 205.
Woldman Phenolphthalein Test in Intestinal Tuberculosis. A. L. Kruger and H. J. Perlberg, Jersey City, N. J.—p. 209.
Epidemic of Acute Digestive Upsets of Unknown Etiology. G. M. Dack, Chicago.—p. 210.
Incidence of Fungi in Stools of Nonspecific Ulcerative Colitis. J. H. Swartz and I. R. Jankelson, Boston.—p. 211.
Inactivation of Pepsin by Compounds of Aluminum and Magnesium. M. J. Schiffrin and S. A. Komarov, Montreal, Canada.—p. 215.
Histaminase: Experimental Study. H. Necheles and W. H. Olson, with assistance of W. Scruggs, Chicago.—p. 217.
Urinary Excretion of Silica in Humans Following Oral Administration of Magnesium Trisilicate: II. In Five Patients with Peptic Ulcer and Three with Pernicious Anemia. R. R. Heffner, New Rochelle, N. Y.; R. C. Page, New York, and A. Frey, Valhalla, N. Y.—p. 219.
Proctologic Diagnostic Unit. S. Schapiro, Brooklyn.—p. 221.
*Acute Appendicitis in Middle and Late Life: Analysis of 421 Cases in Individuals Over 39 Years of Age. F. F. Boyce, New Orleans.—p. 223.

Clinical Evaluation of Gastritis.—Jones emphasizes the need for caution in giving undue importance to minor gastroscopic changes and their bearing on existing symptoms and the necessity of recognizing the important features of avitaminosis or other deficiency states. Therapy in such instances must be based on a correction of a demonstrable deficiency and only then on treatment of the stomach itself. The principles of frequent, simple feedings, adequate rest and avoidance of irritating substances are still the fundamentals by which symptoms can be relieved. Clinical and experimental studies show that atrophy of the stomach may be closely associated with various deficiency diseases, and replacement of the lacking substances in many instances is sufficient to reverse the degenerative processes in the stomach and elsewhere in the gastrointestinal tract, with resulting regeneration of a normal or nearly normal mucous membrane. It is probable that certain cases of gastric atrophy result from chronic inflammatory disease of the gastric wall. Therefore atrophic gastric changes not only should be demonstrated but should be correlated with similar ones in the tongue and with the associated deficiency conditions.

Appendicitis in Middle and Late Life.—Boyce analyzes 421 cases of acute appendicitis in persons more than 39 years of age encountered among 4,207 acute cases at the Charity Hospital during a period of nine years. Children less than 12 and adults more than 39 years of age made up 27.5 per cent of all patients with acute appendicitis, but the deaths among them represented 53.9 per cent of the total mortality. Persons more than 39 years of age provided approximately 10 per cent of the total number of cases but 27.5 per cent of the total mortality. The mortality rose steadily in each successive decade. In the older subject appendicitis is fundamentally a vascular disease, and the initial change tends to be a massive variety of gangrene or true tissue death. The terminal circulation of the appendix lends itself particularly well to this type of pathologic change. The disease tends to spread, and a diffuse or generalized infection is frequent. The appendix is often gangrenous throughout and may be found free in the peritoneal cavity. The gangrene may spread to the mesoappendix or even to the cecum. The tissues may be so friable that sutures cut through them and hemorrhage is sometimes difficult to control. The process may go on to mesenteric thrombosis and pylephlebitis. This type of infection is likely to be followed by thrombosis of the vessels of the abdominal wall, with resulting embolism, infarction and postoperative pneumonia. The disease tends to begin in advance of the attack, sometimes considerably in advance, with a period of vague digestive distress, which may be associated with diarrhea. The initial pain is frequently discomfort rather than acute pain. It is commonly referred to the umbilicus or the epigastrium but may be located in the pelvis. It may never localize, but if it does the process may take days. Left-sided pain is comparatively frequent. The dangerous period of calm after the appendix has ruptured or become gangrenous may last from twenty-four hours to one week or more, during which time the patient may be only mildly uncomfortable. Nausea is more frequent than vomiting, but neither may be present. In the early stages the temperature is likely to be normal or subnormal. The temperature of 70 per cent of the 421 patients was less than 100 F. The frequent presence of other diseases makes the diagnosis difficult. The first symptoms of some patients are headache, malaise, rectal hemorrhage, scrotal pain and hiccups. At operation the appendix should be removed if additional trauma is not involved; otherwise only drainage should be instituted. Anesthesia must not be too deep.

American Journal of Diseases of Children, Chicago

61:1131-1398 (June) 1941

Infectious Mononucleosis, with Special Reference to Cerebral Complications. H. E. Thelander and E. B. Shaw, San Francisco.—p. 1131.
*Serum Therapy of Tetanus, with Special Reference to Course of Antitoxin Titers in Blood After Treatment with Specific Serum. R. Spaeth, Chicago.—p. 1146.
Course and Prognosis of Hemorrhagic Nephritis in Children. F. S. Gachet, Lakeland, Fla.—p. 1175.
IX. Roentgenographic Cephalometric Appraisal of Untreated and Treated Hypothyroidism. M. B. Engel, I. P. Bronstein, A. G. Brodie and P. Wesoke, Chicago.—p. 1193.
Development of Plantar Response in Healthy Infants. Myrtle B. McGraw, New York.—p. 1215.
Quantitative Determination of Pyruvic Acid Content of Blood in Infants and in Children: Attempt to Diagnose Subclinical Deficiency of Vitamin B_1. K. Kato and P.-K. Li, Chicago.—p. 1222.
*Exposure of Tuberculin-Sensitive Children to Exogenous Infection with Human Tubercle Bacilli. M. I. Levine, New York.—p. 1238.
Adamantinoma of Craniopharyngeal Duct: Occurrence in Child Manifesting Marked Cachexia and Dyspituitarism of Lorain Type. T. M. Conley, Kokomo, Ind.—p. 1275.

Serum Therapy for Tetanus.—Spaeth presents evidence which supports the theory that tetanus toxin circulates in the blood stream before it is finally fixed in the tissues of the central nervous system. Titration of 21 specimens of human blood serum from 14 patients with tetanus from six to forty-two days after

intravenous or intramuscular injection of from 20,000 to 100,000 American units of antitoxin suggested that usually single doses of approximately 30,000, and probably not more than 50,000, units should be adequate. Smaller doses for patients first treated after the fourth day of the disease may be feasible. However, a routine dose of 60,000 units for patients admitted to the hospital during the first five days of the disease and 40,000 units for the mildly to moderately ill patients first treated after five days is proposed. The data from titrations of specimens of blood serum obtained from 1 control subject given 30,000 units, 3 given 5,000 units and 1 given 1,500 units of tetanus antitoxin have been compared with those secured from patients with tetanus treated with from 20,000 to 100,000 units of antitoxin. The need for further study of the possible relation between the size of the dose and the degree and duration of immunity conferred is indicated.

Exposure to Tubercle Bacilli.—The value of BCG vaccination, according to Levine, was studied during the last thirteen years in 2,074 children exposed to tuberculosis. Of these 1,005 were vaccinated while 1,069 were kept as controls. The children, all from tuberculous families, were referred to the Bureau of Laboratories from various New York tuberculosis clinics and hospitals where, with rare exceptions, they were placed before 12 months of age. The control group consists of 476 children with an initially negative reaction to tuberculin who were later exposed to patients with open tuberculosis and an inoculated group of 463 children similarly exposed who became sensitive to tuberculin from vaccination with BCG. During observation a positive reaction to tuberculin developed in 93 of the 476 controls. A positive reaction to tuberculin developed within three months in the inoculated children. A comparison of the mortality rates among the two groups, which should serve to assess the potentialities of the danger that an exogenous infection will run a fatal course in a person rendered allergic to tuberculin, reveals that 4 of the children sensitized with BCG died of miliary tuberculosis, whereas of the similarly exposed controls 5 died of miliary tuberculosis. The admittedly limited evidence indicates that the implantation in children less than 6 years of age of exogenous tubercle bacilli on pulmonary tissue sensitive to tuberculin (owing to BCG inoculation) does not result in a more violent tissue response or an increased mortality rate. The average age at death was 12½ months. The results militate against the concept that exogenous infection with tubercle bacilli of persons already allergic to tuberculin gives rise to a more severe type of tuberculosis as judged by the frequency and severity of the lesions or by the mortality rate, regardless of the age when infection occurs.

American Journal of Psychiatry, New York

97:1261-1520 (May) 1941

Early Behavior Problems as Signposts to Later Maladjustment. L. Kanner, Baltimore.—p. 1261.
Psychiatry in General Hospital. B. L. Keyes and R. A. Matthews, Philadelphia.—p. 1272.
Review of Concept of Insanity. S. R. Warson, New Haven, Conn.—p. 1288.
Influence of Visual and Auditory Stimuli on Electroencephalographic Tracing of Petit Mal. R. S. Schwab, Boston.—p. 1301.
Convenient Self-Administering Scale for Measuring Intellectual Impairment in Psychotics. W. C. Shipley and C. C. Burlingame, Hartford, Conn.—p. 1313.
Some Remarks on Diagnosis of the Psychopathic Delinquent. J. Chornyak, Pittsburgh.—p. 1326.
Rorschach Studies in Acute Experimental Alcoholic Intoxication. D. M. Kelley and S. E. Barrera, New York.—p. 1341.
Internal Environment and Behavior: Part III. Water Content. E. F. Adolph, Rochester, N. Y.—p. 1365.
Id.: Part IV. Carbon Dioxide and Acid-Base Balance. N. W. Shock, Berkeley, Calif.—p. 1374.
Some Prognostic Criteria for Response of Schizophrenic Patients to Insulin Treatment. C. Wall, Worcester, Mass.—p. 1397.
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Leg Lengthening Operation.—Moore appraises the end results of lengthening the shorter leg in 41 children. The cause of the shortening in 37 was poliomyelitis, in 2 epiphysial injury from overenthusiastic manipulation of club feet, while 2 others were instances of congenital shortening. The oldest patient is now 24 years of age and his leg lengthening was done ten years ago. The poliomyelitis group was checked for five years on maintenance of length, development of deformities in the leg, changes in muscle power and the gait and function of the leg. Equalization of length by lengthening is feasible and the equality will be maintained through the period of growth at adolescence in most instances, at least in those due to poliomyelitis. The operation is not worth while for patients who do not have sufficient power to walk without a brace. Equalization of length does not improve the gait in poliomyelitis unless the gluteal muscles are powerful enough to fix the pelvis against gravity when walking and the quadriceps can extend the knee against gravity in addition to several pounds of resistance applied to the ankle. If there is any doubt as to whether leg lengthening will improve the gait, the shoe should be built up to an amount equal to the proposed lengthening and the gait observed for a week or two. In view of the difficulties of the operation and the after-care, the procedure is not worth while for less than 1½ inches of shortening. More than 3 inches of lengthening is risky owing to the danger of nerve disturbance. Correction of shortening due to an old osteomyelitis is contraindicated because of the danger of lighting up the infection and because the bone is of poor quality. Congenital shortening is a relative contraindication, and each case must be individualized. Shortening due to epiphysial injury has not maintained the lengthening.

Actinomycosis.—According to Davis, there were admitted, from 1926 to 1936, 46 cases of actinomycosis to the University of Michigan Hospital. Of these 32 were confirmed by finding sulfur granules in the exudate from lesions, by microscopic demonstration of the ray fungus in biopsy specimens, or at necropsy. A follow-up study was made of 22 patients. The patients were fairly well distributed over the state with a few from nearby states. There was no evidence of endemicity and the patients were fairly evenly distributed between the rural and urban population. Only 15 of the 46 patients were farmers; the remainder were laborers, professional men, mechanics and clerks, while 11 were unemployed. A questionnaire sent to 26 of the patients asking whether they had at any time come in contact with animals who had "lumpy jaw" or similar infections gave sixteen negative answers. Only 3 gave a history of chewing grass or straw. It is now an established fact that the causal organism of actinomycosis is an anaerobe, never found growing in the outside world. It has been cultured from the mouths of normal individuals from which typical actinomycotic infection has been subsequently produced in laboratory animals.

The biologist believes the organism of actinomycosis to be a natural inhabitant of the digestive tract, especially the mouth, where it remains as a saprophyte. Given the proper conditions of a lowered resistance and port of entry, the organism becomes pathogenic. Data from the author's cases and from collected material tend to show that the habit of chewing grass, the proximity to infected animals and special types of occupation, heretofore associated with actinomycosis, are probably present in considerably less than 50 per cent of the cases. Clinical observations suggest that the present ideas of the mode of infection of actinomycosis need to be revised. The prognosis is relatively good in the cervicofacial cases. Of 23 such patients 14 were cured, 1 died and 8 were not followed. The outlook in thoracic and abdominal cases is grave. Of 23 patients with abdominal and thoracic actinomycosis, all but 1 had died at the end of fourteen months; the living patient had active lesions in the chest at the end of one and one half years. Of those sufficiently well to leave the hospital, seven months was the average survival time. Treatment consisted of wet dressings of compound solution of iodides, iodides to tolerance, roentgen radiation and surgical drainage when indicated.

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Malunited Colles' Fracture. M. H. Hobart and G. L. Kraft, Evanston, Ill.—p. 55.
*Some Observations on Endometriosis. R. A. Hurd, New York.—p. 61.
*Multiple Primary Malignant Tumors: Report of Two Cases. J. W. White, Scranton, Pa.—p. 71.
*Ovarian Hemorrhage: Analysis of Twenty-Eight Cases from Records of Jefferson Medical College Hospital, 1930 to 1939 Inclusive. M. A. Castallo and L. G. Feo, Philadelphia.—p. 82.
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Prevention of Acute Urinary Retention Following Anorectal and Perineal Surgical Procedures. I. Helfert, Brooklyn, and E. Granet, New York.—p. 129.

Gallbladder Surgery.—Doran and his associates followed up 410 persons with pathologic changes in the gallbladder requiring surgical procedures. Twenty-six of the patients died, a mortality of 6.3 per cent. If instances of acute cholecystitis and common duct stone are excluded, the mortality rate becomes 2.6 per cent for the 210 patients operated on during the last five years of the study. Of the entire series 222 (58 per cent) patients were followed for from six months to five years, and 105 of 149 having had chronic cholecystitis with stones were symptom free and 44 had persistent symptoms after operation. Of 39 with chronic cholecystitis without stones 16 were free from symptoms and in 23 the symptoms persisted after operation. Eighteen of the 22 patients who had had acute cholecystitis with stones were free from symptoms and 4 had persistent symptoms after operation. Only 1 of the 7 with acute cholecystitis without stones complained of pain and indigestion after operation. Two of 5 patients operated on for common duct stones have been free from symptoms.

Endometriosis.—Hurd reports 135 cases in which endometriosis was the sole or predominant cause of symptoms. The 135 cases were encountered among 361 instances, but in 226 the endometriosis complicated some other more significant condition and was of little significance. The author believes that the transtubal implantation of Sampson is the most satisfactory theory. There are few situations in which metaplasia of serosal cells or growth of wolffian or muellerian rests can be offered as better solutions of the problem. Occasionally endometriosis is found as an isolated lesion in the groin, the umbilicus, a laparatomy scar or elsewhere. Usually it is associated with or complicates some inflammatory or neoplastic condition of the uterus or its appendages or it is the factor responsible for the adhesions anchoring a retroverted uterus. The symptoms of endometriosis depend on the area involved. Dysmenorrhea, stressed by several authors as almost pathognomonic of the disease, was the sole complaint of a relatively few of the author's patients, although many stated that their symptoms were frequently aggravated at menstruation. The ratio of nongravid to gravid women was approximately 5 to 4, and only rarely did a woman seek relief solely for sterility. Radical operations gave satisfactory end results almost without exception. Radical operations are probably wiser in these than in the average gynecologic case because few of the women will ever become pregnant and because symptoms are liable to persist as long as ovarian tissue remains. The patient's age, her history, the location and extent of the disease all enter in determining the type of treatment.

Multiple Primary Malignant Tumors.—White explains the genesis of primary multiple cancers on the basis of the interaction of a functionally mature gene bearing the unit character for cancer inheritance with a functionally mature gene bearing the unit character for localization in various structures. This interaction must take place because of environmental stimuli adequate for cytogenesis. The type of neoplasia depends on the structures affected. The sequence of synchronous or metachronous tumor development depends on local environmental factors, on the persistent irritation. Each multiple cancer must be a definite, distinct, atypical and invasive new growth presenting the macroscopic and microscopic characteristics of the morphologic features of an independent cancer, the cells of each being equally capable of characteristic metastasis. Multiple cancers may be classified into (1) double malignant growths, (2) double cancers of different organs and (3) three or more malignant tumors of the same or different organs. Because of their infrequent occurrence the author reports an instance of a simultaneous involvement of the female breast and the skin of the face, and an instance of the concurrent presence of cancer in the thyroid and the lip.

Ovarian Hemorrhage.—Castallo and Feo report 28 cases of ovarian hemorrhage and suggest that the terms intraperitoneal or abdominal hemorrhage of ovarian origin, ovarian rupture causing intraperitoneal hemorrhage, acute hemorrhage from corpus luteum and graafian follicle, hemoperitoneum from ruptured corpus luteum, perforative and nonperforative ovarian hemorrhage and the like be listed under the heading oophorrhagia. Oophorrhagia is that condition in which there is bleeding from an ovulatory site. Review of 28 records of instances in white women fails to reveal any definite etiologic factor. Seven patients gave a history of constipation with purgation and enemas when the ovarian hemorrhage occurred. Of more significance was the fact that 18, or 64.2 per cent, of the patients were nulliparous, while 15 were single women from 15 to 25 years of age. The possibility of an endocrine imbalance seems to be suggested. Ovulation, the phases of folliculization, egg expulsion and formation of the corpus luteum are possible only when a hormone balance exists. An imbalance of this intricate and delicate mechanism may cause abnormal or pathologic sequelae, one of which may be oophorrhagia. The onset of oophorrhagia of 8 of the 28 patients was sudden, 13 complained of sharp abdominal pain, usually more intense and localized to the lower right quadrant, a few had periumbilical or subumbilical pain, 21 had tenderness of the lower right quadrant, 3 in the lower left quadrant, nausea occurred in 11, vomiting in 4, syncope in 3 and slight vaginal bleeding or spotting in 2. Fourteen of the patients had a pulse rate between 90 and 109, and the temperature of 24 was between 98 and 99.8 F. The respiratory rate varied between 20 and 24 per minute in 23. The blood pressure remained above 110 systolic in 22 patients, and in 16 the leukocyte count ranged between 5,300 and 9,900. The large percentage of inaccurate preoperative diagnoses reported in the literature is explainable on the basis of varied symptoms and signs. In the present series a preoperative diagnosis of appendicitis was made in 15 patients, while ovarian hemorrhage was diagnosed correctly in only 5. Other preoperative diagnoses were ectopic pregnancy and salpingitis.

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Why Inguinal Hernia Recurs. C. R. Robins, Richmond, Va.—p. 118.
*Chemotherapy as Aid in Management of Acute Osteomyelitis. G. C. Penberthy and C. N. Weller, Detroit.—p. 129.

Pneumonectomy.—Berry reports 18 cases of pneumonectomy. In 14 complete pneumonectomy was done and in the other 4 the subtotal intrapleural form. Complete pneumonectomy was performed in 10 cases for cancer (2 operative deaths), in 2 cases for highly infected bronchiectasis, suppuration and cystic disease (2 operative deaths) and in 2 cases for advanced chronic tuberculosis (2 operative deaths). The author deprecates the confusion in terminology and technic resulting from the loose use of the term "pneumonectomy" and suggests the more precise terms used in this digest. In cancer, pneumonectomy, if considered at all, should always be complete. Intrapleural mass ligation of the hilus is rejected. In the majority of cases of bronchiectasis, cystic disease and suppuration, because of the possibility of infection, subtotal intrapleural pneumonectomy is the safer procedure. In pulmonary tuberculosis complete pneumonectomy lessens the danger of dissemination and of persistent bronchial fistulas. The author suggests that operative mortality be clearly differentiated both as to the disease involved and whether complete or subtotal pneumonectomy was employed. Vascular anomalies of the hili of the lungs need to be recorded when encountered. The careful study of the respiratory and cardiorespiratory function of the patient after pneumonectomy will result in more intelligent postoperative guidance and treatment and help to determine whether or not thoracoplasty should be recommended following pneumonectomy.

Chemotherapy in Osteomyelitis.—Penberthy and Weller report 19 cases of acute osteomyelitis treated mostly with sulfapyridine and sulfathiazole by mouth. Except in 2 cases the primary source of infection had been from the upper respiratory tract. Cultures of the exudate from the local lesions gave Staphylococcus aureus in all cases save 5 and the hemolytic streptococcus in 4 of the remaining. Sulfathiazole was not more effective than sulfapyridine but better tolerated by some of the patients. Sulfathiazole was used in practically all of the cases of staphylococcic bone infection and associated septicemia. Acetylsulfathiazole crystals were observed in the urine of a number of patients but did not give rise to symptoms. The authors believe that mortality from septicemia associated with bone infections can be considerably reduced if sulfapyridine or sulfathiazole is employed in conjunction with relatively early and adequate surgical drainage of the local lesion. The drugs were seen to aid in limiting the extent of bone destruction and deformity, in preventing secondary metastatic lesions and in influencing favorably all types of complications. Roentgenographic observations in the early acute stage of osteomyelitis are of no value in determining the diagnosis.

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Skin Respiration as Dermatologic Tool. J. C. Amersbach, New York, L. G. Nutini and E. S. Cook, Cincinnati.—p. 949.
*Bacterial Allergy: Etiologic Factor in Dermatitis Herpetiformis. J. L. Callaway, Durham, N. C., and T. H. Sternberg, Peoria, Ill.—p. 956.
Diffuse Cutaneous Metastatic Lesions from Ovarian Carcinoma. E. Urbach, I. Waldow and C. J. Stamm, Philadelphia.—p. 962.
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Lymphogranuloma Venereum: Report of Unusual Example Involving Lymphatic Glands of Buttock and Adjacent Regions. M. J. Costello, New York, and G. De Oreo, Cleveland.—p. 997.
Pityriasis Rosea with Lesions on Mucous Membranes. J. P. Quequierre and C. S. Wright, Philadelphia.—p. 1000.
Early Erythema and Pigmentation from Superficial Roentgen Therapy. L. H. Rosenthal, Detroit.—p. 1004.

Bacterial Allergy.—Callaway and Sternberg report a case of dermatitis herpetiformis in which specific bacterial sensitization was chiefly responsible for the cutaneous aspect of the disease. The patient had had a pruritus and a vesicular eruption for six years prior to present studies, during which time all treatment was unsuccessful. Their studies revealed sensitivity to numerous bacterial allergens, to bromides and to iodides. Roentgen and bronchoscopic examination of the lungs disclosed a low grade bronchiectasis. A pure culture of pneumococcus type VII was grown from the material obtained with the bronchoscope. The patient exhibited a sensitivity to patch tests and to intracutaneous injections of the vaccine made from the pneumococci. Injections of this vaccine resulted in involution of the cutaneous lesions. Chronic bronchiectasis is still present, which may explain the necessity for continuing small doses of the vaccine. The eruption may be produced at will by withdrawal or overdosage of the vaccine. The authors feel that their observations are conclusive but do not necessarily disprove that a virus is the cause of dermatitis herpetiformis, for it is entirely possible for the virus to be present as a persisting infection kept active by an allergic or other factor.

Archives of Ophthalmology, Chicago

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*Simple versus Radical Mastectomy in Carcinoma of Breast. C. W. Schoregge, Bismarck, N. D.—p. 203.
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*Obstetric Analgesia with Sigmodal. F. V. Emmert, St. Louis, and S. G. Schmidt, Chicago.—p. 213.
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Nutritional Requirements in Pregnancy. R. J. Moe, Duluth, Minn.—p. 230.
Clinical Notes of Interstate Postgraduate Association. O. A. Olson, Minneapolis.—p. 233.

Treatment of Carcinoma of Breast.—Schoregge reports 73 cases of carcinoma of the breast. In 34 conservative mastectomy and in 39 the standardized radical operation was done. The plan of treatment was as follows: 1. Either simple or radical resection of the breast or breasts was done (3 women had bilateral involvement). 2. A series of roentgen irradiations was given from five to ten days, followed by another series from two to three months postoperatively. 3. Each series delivered during ten days 1,100 roentgens over the entire anterior wall of the chest of the affected side. About 500 roentgens was given to the posterior axilla and about 300 roentgens to the anterior axilla and supraclavicular areas. Palpable nodules have disappeared under this treatment. There have been some intense postirradiation reactions, such as nausea and vomiting with extreme cutaneous reactions. There was also postirradiation fibrosis of the lungs in varying degress, fibrosis of the pectoralis muscle and lymphedema of the arm. Among the simple mastectomy group 1 patient has lived less than a year since operation, 5 for one year, 3 for two years, 5 for four years, 2 for five years and 1 for six years. Of those having radical mastectomy 1 has lived for less than one year, 2 for one year, 1 for two years, 1 for four years, 2 for five years, 3 for six years, 4 for seven years, 1 for eight years, 5 for nine years and 1 for ten years. There is a disproportion of figures because of the fact that radical mastectomy had precedence over the conservative type of treatment until five years ago. Recent follow-up has been possible for all except 4 patients in the simple mastectomy group and 3 in the radical. There were 28 deaths; 23 patients died of recurrent carcinoma and 5 died of other diseases. There was no immediate postoperative mortality. The average length of life of patients who died following radical mastectomy was twenty-four months and for the conservative type fifteen months. The author believes that all those patients who live for two years following conservative mastectomy will live as long as those who have been submitted to the radical procedure.

Obstetric Analgesia with Sigmodal.—Emmert and Schmidt add 350 obstetric analgesia cases to their original 200 in which delivery was performed under the new barbiturate sodium amyl-beta-bromallyl-malonylurea (sigmodal). There were no maternal fatalities among their 550 cases nor was the morbidity increased. The fetal mortality (exclusive of macerated fetuses or fetuses dead before admission to the hospital) was 0.36 per cent; 2 babies, 1 of whom was premature. The combined use of sigmodal and additional opiates or barbiturates resulted in delayed crying and respiration in 40 infants, 15 of whom needed resuscitation. The most frequently used opiate was dilaudid. Its combination with sigmodal reduced restlessness among the last 350 to 5 instances. Interference with intensity or regularity of contractions was observed in 76, 15 of whom required solution of posterior pituitary. The latter patients had received additional doses of opiates or pentobarbital as supplementary medication. The average total time of labor for primiparas was twelve hours and four minutes; for multiparas, six hours and fifteen minutes. The authors feel, after four years of experience, that the continued use of the drug is warranted. The drug administered in recommended dosage and not given less than two hours before expected delivery has no untoward effect on mother or baby. On the basis of repeated blood examinations their opinion is that the presence of antipyrine in sigmodal does not constitute a hazard and does not predispose to granulocytopenia.

Journal of Pediatrics, St. Louis

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Value of Convalescent Care for Rheumatic Children. L. M. Taran, Brooklyn.—p. 737.
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Ascorbic Acid Absorption in Infantile Diarrhea. A. F. Abt and C. J. Farmer, Chicago.—p. 756.
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Neonatal Cortical Insufficiency (Addison's Disease) Associated with Adrenogenital Syndrome. H. E. Thelander and Mollie Cholffin, San Francisco.—p. 779.
Periarteritis Nodosa in 9 Year Old Child. M. Coe, Queens Village, N. Y., H. A. Reisman and J. De Hoff, Jamaica, N. Y.—p. 793.
Acute Interstitial Myocarditis in Infant: Report of Case with Autopsy Findings. J. V. Greenhouse, W. Felson and M. Seligs, Cincinnati.—p. 799.
Actinomycosis Treated with Sulfanilamide. E. E. Wilkinson, Nashville, Tenn.—p. 805.

Prothrombin in Newborn Infant.—Kove and Siegel determined the time required for the initial prothrombin to be elevated in 4 newborn infants with prothrombin deficiency following the intravenous administration of a water-soluble derivative of menadione. They also tried to discover whether the prothrombin of the infant was qualitatively similar to that of the normal adult. In all cases, regardless of the degree of hypoprothrombinemia, there was a definite prothrombin response within two hours of intravenous naphthoquinone therapy. The latent period varied from half an hour to two hours. This latent period was not related to the initial degree of prothrombin deficiency. Following this latent period the first response was associated with a sharp drop in the prothrombin clotting time in the infants with initial high clotting times. The effect following the initial response appeared to depend on the degree of prothrombin deficiency. Study of the nature of the prothrombin of newborn infants suggests that it is qualitatively similar to that of the normal adult and that this similarity exists irrespective of the original concentration or source of the prothrombin and regardless of the presence or absence of hypoprothrombinemia.

Journal of Urology, Baltimore

45:795-936 (June) 1941

Bilateral Renal Ectopia: Report of Four Additional Cases. H. A. Fowler, Washington, D. C.—p. 795.
Surgery of Inferior Vena Cava in Urologic Conditions. A. Hyman and H. E. Leiter, New York.—p. 813.
Postcaval Ureter. J. DeCarlo, Philadelphia.—p. 827.
Incomplete Duplication of Ureter, with One Ending Blindly. W. L. Grantham and R. C. Bunts, Asheville, N. C.—p. 832.
Cystitis Cystica: Bacteriologic Studies in Series of Twenty-Eight Cases. W. D. Warrick, Chicago.—p. 835.
Neurogenic Bladder in Diabetes Mellitus: Early Recognition and Treatment with Report of Cases. A. Rudy and S. R. Muellner, Boston.—p. 844.
Primary Tuberculosis of Prostate: Report of Case. G. W. Strom and G. J. Thompson, Rochester, Minn.—p. 858.
Influence of Reticuloendothelial System on Internal Secretory Activity of Transplanted Ovaries in Rat. A. J. Miller and A. K. Lampton, Louisville, Ky.—p. 863.
Influence of Hormones on Development of Reproductive System. C. R. Moore, Chicago.—p. 869.
Factors in Stability and Variability of Semen Specimens: Observations on 640 Successive Samples from Twenty-Three Men. R. S. Hotchkiss, New York.—p. 875.
Reminiscences of Early Experiences in Urology in New York City. C. L. Begg, New York.—p. 889.
New Table for Cystoscopy, Fluoroscopy and Roentgenography. D. M. Davis, Philadelphia.—p. 894.
*Sulfacetimide: Toxicity and Efficacy in Gonorrhea and Urinary Tract Infections: Preliminary Report. H. H. Young, Justina H. Hill, H. J. Jewett and R. W. Satterthwaite, Baltimore.—p. 903.

Sulfacetimide for Gonorrhea.—Young and his collaborators administered sulfacetimide (*p*-amino-benzene-sulfonyl-acetylimide) to 105 patients with urinary infections. The patients received daily from 4 to 12 Gm. for from two to forty-three days. Fifty-one of the patients had gonorrhea, 10 chronic urethritis, 29 urinary infections and 15 miscellaneous conditions. Sulfacetimide levels of free drug in urines from patients ranged from 27.7 to 157.5 mg. per hundred cubic centimeters, the mean level being 62 mg. The drug was discontinued in 29 of the 51 patients because they were free from symptoms or because the urethral discharge failed to stop. In 3 of the 29, the gonococcus was present in cultures of the prostatic secretion even after the discharge had ceased. Of the 29, 15 patients are free from symptoms and have had at least one negative prostatic secretion and culture or have shown no recurrence after one or more provocative tests. In the remaining 14 patients the drug was ineffective. Unless the patient responded within four days, the drug was stopped. The other 22 patients failed to return after the discharge ceased or are still under treatment. Sulfacetimide for gonorrhea does not appear to be as successful as sulfathiazole, but its lower toxicity may warrant its trial for patients who are sensitive to other sulfonamides. For the 29 patients with infections of the urinary tract the daily dose of sulfacetimide for two or three weeks was 4 Gm. after an initial dose of 3 Gm. Fifteen patients have completed their course of therapy and 14 have lapsed or are still under treatment. In 7 of the 15, treatment was successful. The infecting organism of 5 was Escherichia or Aerobacter, a mixed infection including Proteus, and of 1 it was a gram-negative bacillus of the influenza group. Of the 8 failures there were toxic reactions in 2 and the drug was stopped, and in the other 6 a mixed infection was present. The patients given daily doses of 4 Gm. of the drug had no headaches or general malaise. A daily dose in excess of 6 Gm. usually was followed by some reaction. Larger doses do not appear to increase the efficacy of the drug.

Kansas Medical Society Journal, Topeka

42:237-280 (June) 1941

Gynecologic Management of Barren Marriage. G. H. Gardner, Chicago.—p. 237.
Thymic Death. C. A. Hellwig, Wichita.—p. 242.
Full Term Abdominal Pregnancy with Living Mother and Child. M. J. Renner, Goodland.—p. 245.
Recovery Following Streptococcic Septicemia. K. E. Voldeng, Wellington.—p. 248.
Management of Dental Program for Children During Growth Period. L. R. Kramer, Topeka.—p. 249.
History of Blood Transfusions. W. J. Kiser, Wichita.—p. 250.
Cardiac Metastasis from Carcinoma of Thyroid. W. A. Grosjean and C. D. Snyder, Winfield.—p. 253.
Pseudomucinous Cystadenoma. L. A. Calkins, Kansas City, and O. H. True, Hays.—p. 255.

Medical Annals of District of Columbia, Washington

10:205-252 (June) 1941

"Stand By!" D. L. Borden, Washington.—p. 205.
Some Mental Problems of Aging and Their Management. Winfred Overholser, Washington.—p. 212.
Practical Therapy with Vitamin K: Simple Reclassification of Hemorrhagic Diseases Due to Deficiency of Blood Prothrombin. A. M. Grossman, Washington.—p. 218.
Physical Therapy in Treatment of Rheumatoid Arthritis and Osteoarthritis. I. Levin, Washington.—p. 225.
Further Experiences with Mapharsen in Syphilis: Report of Fatality. G. W. Creswell and G. B. Roth, Washington.—p. 230.

Minnesota Medicine, St. Paul

24:421-516 (June) 1941

Gynecologic Malignant Disease: Some Problems in Treatment. J. L. McKelvey, Minneapolis.—p. 433.
Bronchiogenic Carcinoma. E. J. Simons, Swanville.—p. 438.
Bone Marrow Biopsy. R. Hebbel, Minneapolis.—p. 442.
Pneumonia in Duluth During 1939-1940. W. D. Coventry, Duluth.—p. 450.
Attempt to Prevent Postoperative Pneumonia with Respiratory Vaccine. W. J. Tennison, J. A. Bargen and H. G. Wood, Rochester.—p. 454.
*Burbot Liver Oil in Treatment of Various Dermatoses. J. F. Wilson, Philadelphia.—p. 456.
Colocentesis—A Glimpse of the Surgical Past. C. D. L. Cromar and C. W. Mayo, Rochester.—p. 458.

Burbot Liver Oil in Treatment of Various Dermatoses.—Wilson used an ointment containing 80 per cent of burbot liver oil for the treatment of 33 patients with varicose ulcers, 7 with ecthyma vulgaris, 3 with indolent ulcers following surgical procedures and 4 with psoriasis. The patients with varicose ulcers ranged in age from 50 to 71 years and had suffered from recurrent stasis ulcers for from ten to forty-seven years. In view of their great individual differences accurate evaluation is difficult, but all the patients improved rapidly with the use of the ointment. Other measures were used to improve the circulation, but improvement occurred while the ointment was being used. Four patients suffered an exacerbation of a dermatitis at the border of the ulcer where the ointment came in contact with the skin. This healed quickly when the application was limited to the ulcerated area. The ulcers of the 7 patients with severe ecthyma vulgaris of the lower extremities healed rapidly. Two of the patients with psoriasis improved but later relapsed. The 3 ulcers following surgical procedures had been slow in healing, but following the ointment therapy improvement and healing were rapid.

New Jersey Medical Society Journal, Trenton

38:297-342 (June) 1941

Hyperinsulinism. L. G. Rountree, Philadelphia.—p. 301.
Cardiovascular Disturbances in Gastrointestinal Diseases. C. L. Andrews, Atlantic City.—p. 305.
Occurrence and Treatment of Spontaneous Traumatic Pneumothorax in Bilateral Artificial Pneumothorax. M. J. Fine, Newark.—p. 308.
Inclusion Blennorrhea. H. D. Barnshaw, Camden.—p. 312.

Ohio State Medical Journal, Columbus

37:513-608 (June) 1941

Pneumonia Studies: Five Years' Experiences. J. E. Benjamin and J. M. Ruegsegger, Cincinnati.—p. 529.
*Ligation of Patent Ductus Arteriosus. P. W. Gebauer and A. D. Nichol, Cleveland.—p. 538.
Hydatidiform Mole: Report of Case. A. Piraino, Oberlin.—p. 544.
Usefulness of Gonadotropic Substances in Treatment of Sterility of Endocrine Origin. J. C. Burch and O. Wright, Nashville, Tenn.—p. 546.
Role of Eye in Autonomic Nerve Imbalance. G. S. Lamkin, Sardinia.—p. 549.
Amniotic Hernia Containing Entire Liver, Gallbladder, Large and Small Bowel. G. J. Searle Jr., Mansfield, and J. Engmire, Mount Gilead.—p. 551.
*Treatment of Angina Pectoris and Coronary Artery Disease with Sex Hormones. R. W. Bonnell, C. P. Pritchett and T. E. Rardin, Columbus.—p. 554.
Extensive Amebiasis. W. F. Ashe and R. Johansmann, Cincinnati.—p. 557.

Ligation of Patent Ductus Arteriosus.—Gebauer and Nichol report 3 instances of ligation of the patent ductus arteriosus; the ages of the patients were 39, 14 and 11 years, respectively. The following tentative conclusions are presented: Operation should be performed early because children withstand

thoracic surgery much better than adults, when the operation is technically easier and the postoperative reaction is less severe. Early intervention should be preceded by a period of observation long enough to preclude the rarity of spontaneous closure. Such patients may be forced to inactivity by a diminished cardiac reserve and throughout life are distinctly more susceptible to bacterial endocarditis, aneurysm and rupture of the ductus, thrombus formation and cardiac failure. Exploration in later (adult) life should be most cautious and in some instances should be abandoned rather than to attempt to dissect around something which has ceased to exist.

Treatment of Angina Pectoris and Coronary Artery Disease.—Bonnell and his colleagues used preparations of sex hormones in the treatment of 23 patients having heart disease; 21 of the patients had angina pectoris with cardiac pain as the cardinal symptom, 1 had extreme weakness and exhaustion following an acute coronary occlusion, and 1 hypertensive arteriosclerotic heart disease, congestive heart failure and cardiac asthma. Five men received androgen only, 11 estrogens alone and 2 both substances. All the women were treated with estrogen. The dose of estrogen varied from 2,000 to 10,000 international units given two or three times a week, and then the dose was decreased gradually or the interval between injections was increased. The initial dose of androgen varied from 3 to 5 capon units. After the treatment improvement was noticed in 22 of the 23 patients. Four men and 2 women had complete relief from symptoms while being treated, 5 men had excellent relief but had occasional mild pains, and 8 men and 3 women had a good result; that is, there were definitely fewer anginal attacks and exercise tolerance was increased but they continued to experience mild anginal attacks. Fatigue and dyspnea when present were benefited in the same proportion as was the anginal syndrome. Improvement of patients is evidently due to a vasodilating property of the hormone preparations on the coronary circulation.

Surgery, St. Louis

9:657-824 (May) 1941

*Early Operative Treatment of Acute Hematogenous Osteomyelitis. J. A. Key, St. Louis.—p. 657.

*Delayed Operative Treatment of Acute Hematogenous Osteomyelitis. J. C. Wilson, Los Angeles.—p. 666.

Fibrosarcoma of Soft Parts of Extremities. S. A. Zieman, Chicago. —p. 675.

Blood Supply of First Part of Duodenum, with Description of Gastroduodenal Plexus. H. A. Wilmer, Minneapolis.—p. 679.

Repeated Perforations of Peptic Ulcers. R. Cohn, San Francisco.—p. 688.

Experimental Studies on Alimentary Azotemia: I. Role of Blood Absorption from Gastrointestinal Tract. C. F. Chunn and H. N. Harkins, Detroit.—p. 695.

Studies on Pancreatitis: Observations on Disappearance of Experimentally Increased Blood Amylase and Lipase. H. L. Popper and F. Plotke, Chicago.—p. 706.

Two Stage Resection of Carcinoma of Ampulla of Vater. R. B. Moreland and B. S. Freeman, Hines, Ill.—p. 712.

Surgical Masks: Experimental Study. J. W. Hirshfeld and P. J. Laube, New Haven, Conn.—p. 720.

Method to Facilitate Prompt Recognition of Esophageal Diverticulum at Time of Operation. S. Israel, Houston, Texas.—p. 731.

Incidence of Appendectomy in Four Unrelated Population Groups. R. E. Buirge, New Hampton, Iowa.—p. 733.

Surgical Significance of Abdominal Wall Pain. D. W. Smith, Miami, Fla., and W. Bates, Philadelphia.—p. 741.

*Surgery in Carotid Sinus Syndrome. J. H. Mulholland and E. A. Rovenstine, New York.—p. 751.

Spontaneous Cerebral Hemorrhage: Surgical Treatment of Selected Cases. L. T. Furlow, A. D. Carr and C. Wattenberg, St. Louis.—p. 758.

Acute Trochanteric Bursitis with Calcification. A. J. Schein and O. Lehmann, New York.—p. 771.

Role of Estrogenic Substances in Production of Malignant Mammary Lesions, with Report of Case of Adenocarcinoma of Breast, Possibly Induced by Strenuous Estrogen Therapy. W. H. Parsons, Vicksburg, Miss., and E. F. McCall, Augusta, Ga.—p. 780.

Hematogenous Osteomyelitis.—Key points out that a patient suspected of having acute hematogenous osteomyelitis presents a surgical emergency. On entrance to the hospital he should be given a full dose of sulfathiazole by mouth or sodium sulfathiazole intravenously. If he is exhausted and dehydrated he should be given ample sedation and intravenous fluids. If extreme toxicity exists he should be given a large dose of staphylococcus antitoxin, the extremity should be immobilized and the patient should be put at rest for a few (usually eight to twelve) hours or until the dehydration and exhaustion is corrected. He should then be operated on. The suspected bone should be exposed by the most direct route and the incision should be ample. Whether or not pus is encountered after the periosteum is incised, the medulla should be opened. A sudden decrease in the intramedullary pressure should be avoided. The operation is only for drainage, and infected and necrotic bone should not be removed. If the medullary cavity is involved extensively, and the patient's condition is good, a relatively long window is made in the cortex. After hemostasis has been effected, the wound is sprinkled generously with powdered sulfathiazole and packed loosely with petrolatum gauze and the extremity is immobilized. Postoperatively the patient is given intravenous fluids, repeated small transfusions, if indicated, and large doses of antitoxin for as long as the nonsegmented leukocytes are increased. The author believes that early operation, even though a normal bone may be opened occasionally, will not only decrease the mortality but prevent much chronic osteomyelitis and lessen the number of joints destroyed. The most effective measures for the prevention of chronic osteomyelitis with its resultant crippling are early diagnosis and prompt and effective drainage. Patients less than 2 years of age are similarly treated, but the operation is delayed until an extraosseus abscess appears. The latter is drained but the bone is not disturbed. As the bones of infants are porous, the part that becomes necrotic tends to be absorbed without sequestration. About half of the cases in infants are caused by streptococci, and such infection tends to heal without sequestration. Vaccines and toxoid cannot be expected to help an acute infection. To give an acutely ill patient vaccine or toxoid is to attempt to stimulate an exhausted defense mechanism by adding a burden to it. Bacteriophage appears to be without clinical effect. Serums may prove to be of great value, but even with their use early drainage is advisable.

Delayed Operative Treatment of Hematogenous Osteomyelitis.—Wilson analyzes 33 cases of acute hematogenous osteomyelitis admitted to the orthopedic wards of the Children's Hospital since 1935. The acuteness of the onset of the disease, with a severe constitutional reaction, and, as a rule, a bacteremia are proof of a general infection. The infecting bacteria are blood borne from a focus. Patients with clinical signs of acute osteomyelitis have shown progressive roentgen evidence of the disease, although the constitutional symptoms seemed to abate more rapidly under the influence of sulfonamides. However, these drugs should not be administered until the type of infecting organism is determined. Sulfanilamide and sulfathiazole may be considered valuable agents in that they help to stay the hands of the surgeon for a short time while protective forces are mustered. Twenty-three of the 33 patients gave a definite preosteomyelitic history of furuncles, urinary infection, blisters, splinters, scratches, impetigo, otitis media, chickenpox or laryngitis. Twenty-two had single diffuse lesions and 11 had more than one diffuse lesion. No patient had more than one metastatic lesion. Hemolytic Staphylococcus aureus was the infecting organism in 19, Staphylococcus aureus in 8, the beta hemolytic streptococcus in 3, the alpha hemolytic streptococcus in 1, and mixed alpha and beta streptococci in 1; hemolytic Staphylococcus citreus was recovered in pure culture in 1. Organisms were recovered from the blood stream of 19 patients. Eight patients were operated on during the first seven days of their illness; in 5 of these no metastatic lesions developed, in 3 one metastatic lesion developed and 2 of the 8 patients died following drainage. Operative drainage was instituted between the seventh and fourteenth days of the illness in 18 patients; 11 had no metastatic lesions and 7 had one metastatic lesion. There were no deaths among these patients nor were there any deaths among the 3 patients whose abscesses were drained between the fourteenth and twenty-first days of their illness. Two of the latter had no metastatic lesions and 1 had one metastatic lesion. Spontaneous rupture occurred in 3 of the 4 patients whose lesions were not drained, and 1 died twenty-four hours after admission with osteomyelitis of the tibia and well developed bronchopneumonia. Bone

infections of 17 patients are now healed, drainage from the infected bone of 8 still persists but the patients' general condition is good, and 5 patients could not be traced. The author concludes that the surgeon should not be stampeded into an inexpedient operation simply because an abscess develops within the substance of a bone of a patient with septicemia.

Surgery for the Carotid Sinus Syndrome.—According to Mulholland and Rovenstine, surgical denervation of the hyperactive carotid sinus has been carried out on 5 patients at Bellevue Hospital. One side was always more sensitive, and this side was denervated. Before operation further diagnostic tests are made by blocking the sinus nerve with 10 cc. of a 1 per cent solution of procaine hydrochloride injected in the region of the bifurcation of the carotid artery. When the nerve to the carotid sinus is blocked, pressure over the bulb will not produce any symptoms.

Surgery, Gynecology and Obstetrics, Chicago

73:1-128 (July) 1941

Joint Débridement: Surgical Treatment of Degenerative Arthritis. P. B. Magnuson, Chicago.—p. 1.
Effect of Stored Citrated Blood Transfusions on Patients with Hypoprothrombinemia. J. E. Karabin, H. Udesky and L. Seed, Chicago.—p. 10.
Basis of Histologic Diagnosis of Carcinoma, with Special Reference to Carcinoma of Cervix and Similar Lesions. R. Meyer, Minneapolis.—p. 14.
*Management of Jaundiced Patient, with Special Reference to Vitamin K. F. A. Coller and J. M. Farris, Ann Arbor, Mich.—p. 21.
Classification of Gastric Carcinoma. R. Schindler, P. E. Steiner, W. M. Smith, Chicago, and M. E. Dailey, San Francisco.—p. 30.
*Prevention of Postoperative Pneumococcus (Type I) Pneumonia by Means of Prophylactic Use of Sulfapyridine: Experimental Study. L. A. Hochberg, B. B. Hershenson, L. Winkelman and D. Rivkin, Brooklyn.—p. 40.
Gastrostomy in Cases of Carcinoma of Esophagus. R. H. Sweet, Boston.—p. 55.
Distant Metastasis in Cancer of Upper Respiratory and Alimentary Tracts. R. R. Braund and H. E. Martin, New York.—p. 63.
Bacterial Contamination of Wounds, from Air, from Skin of Operator and from Skin of Patient. J. W. Hirshfeld, New Haven, Conn.—p. 72.
*Beneficial Effects of Oxygen Therapy in Experimental Traumatic Shock. J. G. Schnedorf and T. G. Orr, Kansas City, Kan.—p. 79.
Twelfth Rib Incision as Approach to Kidney. K. H. Digby, Hong Kong, China.—p. 84.
Hormone Studies in Presence of Hydatidiform Mole and Chorioepithelioma. F. L. Payne, Philadelphia.—p. 86.
Split Vermilion Bordered Lip Flap. B. Cannon, Boston.—p. 95.
Molybdenum Steel Lag Screw in Internal Fixation of Fractured Neck of Femur. F. A. Lorenzo, Punxsutawney, Pa.—p. 99.
Perforated Ulcer of Ileum Opposite Meckel's Diverticulum. W. G. Maddock, Ann Arbor, Mich., and M. B. Coventry, Rochester, Minn.—p. 105.
Treatment of Tuberculous Cavities. C. R. Lavalle, Buenos Aires, Argentina, South America.—p. 108.
Perforation of Pancreatic Pseudocysts: Report of Six Cases. J. D. Koucky, W. C. Beck and M. C. Todd, Chicago.—p. 113.
How Does a Colostomy Afford Protection Against Peritonitis from Subsequent Operations? C. E. Rea, Minneapolis.—p. 120.

Vitamin K for Jaundice.—Coller and Farris administered vitamin K or one of its related compounds to patients in the general surgical services for the last eighteen months in order to prevent postoperative bleeding in jaundiced patients. At the University Hospital the test for determination of the amount of prothrombin present is employed exclusively because of its easy performance. It is an excellent clinical test of a patient's tendency to bleed, and its results check well with those obtained by more complicated methods. The bleeding tests of Duke and Ivy are not to be relied on for detecting hypoprothrombinemia, as they may give normal values when a test of prothrombin activity will show that the patient is in imminent danger of hemorrhage. The only true indication for vitamin K therapy is a lowered prothrombin blood level. Vitamin K for menorrhagia, metrorrhagia and essential hematuria is wasted therapy. Prothrombin, like other serum proteins, is supplied by the liver and therefore a prothrombin test is a test of hepatic function and parallels other tests as an index of hepatic dysfunction. The therapeutic requirement is to restore the patency of the biliary ducts and to protect the hepatic parenchyma. Repeated administration of fluids intravenously in the presence of hemorrhage and the continued aspiration of bile from the gastrointestinal tract by means of the Wangensteen suction apparatus require that the prothrombin clotting activity be determined. To attain the therapeutic objective a high protein and carbohydrate diet should be given. Attention to other vitamin needs will enhance the state of general nutrition, cardiac reserve (vitamin B), resistance to infection (vitamins A and D) and wound healing (vitamin C). Difficult surgical procedures can be successfully carried out only if bleeding is controlled, especially in jaundiced patients.

Sulfapyridine to Prevent Pneumonia.—Hochberg and his co-workers subjected dogs to the following three procedures, with from three to four weeks between the procedures: (1) a simple abdominal laparotomy with manipulation of the viscera, (2) a simple gastrostomy with previous sulfapyridine therapy and postoperative intrabronchial insufflation of a virulent culture of pneumococci and (3) an intrabronchial insufflation of a similar culture in an animal not previously treated with sulfapyridine. From an analysis of the hematologic and blood gas studies the authors observed no apparent contraindication to the use of sulfapyridine in the prophylaxis of postoperative pneumonia. In the experimental animal the blood constituent changes and oxygen supply following the prophylactic use of sulfapyridine are not much different from those of animals having a smooth and uneventful postoperative course. The concentrations of sulfapyridine in the blood before operation varied between 4.1 and 8.2 mg. per hundred cubic centimeters. Half an hour after operation these concentrations were between 5.9 and 8.3 mg., and four hours after operation they were between 6.2 and 8.9 mg. per hundred cubic centimeters of blood. On the first day after operation and about fifteen hours after insufflation of the culture into the bronchi the blood levels averaged 8.6 mg. In 1 animal in which the sulfapyridine was omitted the night before the gastrostomy was performed, the postoperative blood levels were essentially the same. Postoperative pneumonia developed in only 1 animal; the disease was benign and the animal made a complete recovery.

Oxygen Therapy in Experimental Shock.—Schnedorf and Orr report the effect of oxygen inhalation on experimental traumatic shock in 20 dogs given pentobarbital sodium; 10 breathing atmospheric oxygen served as controls and 10 were treated with 100 per cent oxygen. While the degree of trauma indicated by the fluid loss into the traumatized limb was the same in the 20 dogs, the average life of the control dogs was four and five-tenths hours and of those treated with oxygen it was seven and seven-tenths hours. The blood pressure of the dogs treated with oxygen was higher four, six and eight hours after the trauma than that of the untreated group. In the treated dogs the arterial oxygen saturation was maintained around 92 per cent throughout. Study of the oxygen content of arterial and venous blood shows that oxygen therapy can significantly elevate the oxygen content and saturation even in the presence of a slowed circulation in shock. These studies correlate those of Aub and Cunningham, and of Wood, Mason and Blalock. The resistance to a fall in blood pressure and the increased length of life of the treated dogs demonstrate the beneficial action of oxygen inhalation in the treatment of experimental traumatic shock. Capillary dilatation or hemorrhage in the intestine and edema of the viscera and of the lungs, as described by Moon and Blalock in their dogs, was not present in any of the authors' animals. At necropsy the intestine was blanched; the liver and particularly the spleen were contracted, suggesting loss of blood volume.

West Virginia Medical Journal, Charleston

37:289-336 (July) 1941

Hallux Valgus. R. L. Anderson, Charleston.—p. 289.
Plastic Surgery of Nose and Face. E. D. King, Cincinnati.—p. 293.
Sympathetic Block in Treatment of Thrombophlebitis. J. W. Carney, Logan.—p. 298.
Wizard Hands (Tribute to Francis T. Stewart, M.D.). F. E. Keller, Philadelphia.—p. 300.
Report of Poliomyelitis Epidemic in West Virginia Public Health District No. 2. H. Duncan, Lewisburg.—p. 303.
Population Trends, with Special Reference to West Virginia. S. L. Galpin, Morgantown.—p. 306.
Perineal Repair with Cotton and Postoperative Sitz Baths. A. P. Hudgins, Charleston.—p. 309.
Sterility Studies in Women. E. J. Humphrey, Huntington.—p. 311.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

38:59-90 (April-June) 1941

Dystrophia Myotonica in Infants and Children. O. Maas.—p. 59.

British Journal of Dermatology and Syphilis, London

53:171-200 (June) 1941

Treatment of Postradiation Necrosis by Radiation Therapy. A. Eidinow. —p. 171.
New Preparation of Metallic Oxides with Dehydrating and Antiphlogistic Effects on Skin. H. C. Semon and F. Herrmann.—p. 177.
Syphilis in Saint Simon's Memoires. J. D. Rolleston.—p. 183.
"Pemphigus Solitarius Cicatrisans." T. Davies.—p. 187.

British Journal of Radiology, London

14:187-218 (June) 1941

Preliminary Observations on Quantitative Examination of Human Biopsy Material Taken from Irradiated Carcinomas. A. Glücksmann.—p. 187.
Physical Investigations with 140 Kilovolt Radiation. L. F. Lamerton. —p. 199.
Role of Mass Radiography in Tuberculosis. G. Jessel.—p. 206.
Primary Carcinoma of Jejunum: Case Report. W. J. Craig.—p. 210.
Research into Physical Factors Concerned in Indirect Radiography: Part III. Simple Method of Detecting Experimentally the Presence of Phenomenon of Latent Image Reinforcement in Fluorescing Screen. B. Stanford.—p. 213.
Right-Sided Aorta. A. Hope Gosse.—p. 215.

British Medical Journal, London

1:877-916 (June 14) 1941

Bacteriologic Investigation of Wounds Treated by Closed Plaster Method. J. Orr-Ewing, J. C. Scott and A. D. Gardner.—p. 877.
Diabetic Coma in Series of Young Diabetics. L. Cole.—p. 882.
Differential Diagnosis of Contusion of Brain and Psychoneurosis. W. A. Brend.—p. 885.
Sulfonamide Treatment of Hypopyon Ulcer of Cornea. I. L. Johnstone. —p. 887.
Calculation and Prescribing of Infants' Feeds: II. Neonatal Period; Practical Points in Regulation of Feeds in Maternity Hospitals and Homes. Helen M. M. Mackay.—p. 888.

1:917-952 (June 21) 1941

Some Problems of Miniature Mass Radiography. J. V. Sparks.—p. 917.
Tuberculosis in Recruits. S. H. Graham and M. Davies.—p. 920.
Trichlorethylene as Inhalation Anesthetic. C. L. Hewer, with preparatory note by C. F. Hadfield.—p. 924.
Use of Sulfapyridine in Subacute Bacterial Endocarditis, with Report of Case. J. G. Macleod.—p. 927.
Hyperventilation Tetany in Tropical Climates. A. Wingfield.—p. 929.

1:953-992 (June 28) 1941

Reduction of Dust-Borne Bacteria in Air of Hospital Wards by Liquid Paraffin Treatment of Bedclothes. J. C. Thomas and M. van den Ende.—p. 953.
Recent Experiences in Treatment of Gonorrhea in the Male. R. M. B. MacKenna.—p. 958.
*Acute Gonorrhea: Further Observations on Treatment by Sulfapyridine Followed by Lavage. J. Sommerville.—p. 961.
*Surgical Treatment of Congenital Pyloric Stenosis. D. Levi.—p. 963.
Ophthalmic Casualties Resulting from Air Raids. Dorothy R. Campbell. —p. 966.

Acute Gonorrhea.—Sommerville describes the results obtained in 300 consecutive cases of acute gonorrhea treated with sulfapyridine followed by lavage. Dosage consisted of 0.5 Gm. of sulfapyridine four times a day for one week, followed by lavage for two weeks. Toxic effects were noted in 13 per cent of the cases, none of which were serious. Complications arising after treatment occurred in 5 (1⅔ per cent); an exciting cause was demonstrable in 4 of these. In only 1 (0.33⅓ per cent) case did the drug fail to prevent a complication. Relapse was observed in 20 cases (6⅔ per cent); alcoholism was admitted in 15 and almost certainly present in 2 others. In 3 cases (1 per cent) relapse occurred for no apparent reason.

Congenital Pyloric Stenosis.—Levi reports a series of 100 consecutive operations on breast fed infants (87 boys, 13 girls) for pyloric stenosis, with a 100 per cent cure. A similar series of 46 operations on bottle fed infants resulted in 5 deaths from gastroenteritis. The author discusses the practical implications of the striking difference in mortality from pyloric stenosis in breast and bottle fed infants. A child seems to lose its immunity to gastroenteritis if once it is taken off the breast. If the mother is well the infant should continue to be breast fed until the presence of pyloric stenosis is definitely excluded. It should be regarded as axiomatic that breast milk never disagrees with an infant, and students, nurses, midwives, welfare and social workers should be so taught. Gastroenteritis is to be feared in infants with pyloric stenosis whether medically or surgically treated. Its risk is proportionate to the duration of hospital treatment. Surgical treatment, requiring hospitalization for only a week, lessens the danger. The author points out that statistics comparing medical and surgical management of pyloric stenosis are worthless unless accompanied with information as to the method of feeding employed.

Edinburgh Medical Journal

48:361-432 (June) 1941

Detecting Pelvic Contractions. J. C. Moir.—p. 361.
Orthopedics: Brief Survey of Its Position. W. A. Cochrane.—p. 379.
Report on Six Obsessional Cases. Berta Andratschke.—p. 394.
Studies on Stored Blood: VII. Effect of Sodium Sulfapyridine, Albucid Soluble and Hydrogen Ion Concentration on Phagocytosis. J. W. Czekalowski.—p. 405.
Sudden Blindness Following Gastrointestinal Hemorrhage. C. K. Robertson.—p. 414.

Journal of Mental Science, London

87:313-476 (July) 1941

*Incidence of Conjugal Neurosyphilis. E. L. Hutton.—p. 313.
Contribution of the Rorschach Method to Clinical Diagnosis. W. D. Ross.—p. 331.
Fatigue and Effort Syndrome. E. Guttmann and H. Rimoldi.—p. 349.
Treatment of Emotional Problems in Childhood. W. H. Whiles.—p. 359.
Mental Sequelae of Head Injury. H. A. Palmer.—p. 370.
Psychogenic Episodes in Course of Major Psychoses. E. W. Anderson and W. P. Mallinson.—p. 383.
Survey of Skin Testing, with Observations on Suggested Method in Epileptics. D. C. Dewar.—p. 397.
Convulsion Therapy in War Psychoneurotics. R. Good.—p. 409.
Self-Governed Patients' Social Club in Public Mental Hospital. J. Bierer and F. P. Haldane.—p. 419.
Observations in Hypoglycemia: II. Blood Sugar and Consciousness. W. Mayer-Gross and F. Berliner.—p. 427.
Arachnodactyly (Dolichosténomélie of Marfan). E. C. Dax.—p. 434.

Conjugal Neurosyphilis.—Hutton endeavored to determine the incidence of neurosyphilis among the conjugal consorts of 492 female patients with dementia paralytica treated at the Malaria Therapy Centre at Horton between 1925 and 1939. Evidence for or against syphilis was obtainable for only 154 men, and of these 76 had negative Wassermann reactions and 78 had contracted the disease. Of the 78, 4 have had primary or secondary syphilis, 11 tertiary syphilis, 10 latent syphilis, 37 neurosyphilis and 16 a history of having acquired syphilis but the source of their infection is sketchy. It is seen that the incidence of neurosyphilis is much higher than that of tertiary syphilis among the conjugal partners of these women. The observations support the theory of a neurotropic strain. As the contagious period of syphilis appears to be relatively short, those conjugal partners whose relationships are instituted outside this period remain free from infection although cohabiting with a syphilitic spouse. The author believes that the incidence of conjugal neurosyphilis is sufficiently high to warrant the adoption of routine measures for investigating all marital partners of neurosyphilitic persons and to institute prophylactic treatment to all those with latent asymptomatic neurosyphilis so found.

Journal of Pathology and Bacteriology, Edinburgh

52:283-412 (May) 1941

Diphtheria in Liverpool During Years 1937-1940. H. D. Wright.—p. 283.
Studies on Toxin of Corynebacterium Pyogenes. R. Lovell.—p. 295.
Cellular Changes in Spleen and Lymph Glands in Mice Used for Carcinogenic and Related Experiments, with Special Reference to Giant Cells of Spleen. L. Dorothy Parsons and F. L. Warren.—p. 305.
Growth of Blood of Sucking Mouse. H. Grüneberg.—p. 323.
Observations on Autohemolysis in Familial Acholuric Jaundice. J. V. Dacie.—p. 331.
Sex Hormones and Basophilic Granulation of Liver Cells in Rat. V. Korenchevsky.—p. 341.
Thymus of Rat and Sex Hormones. M. A. Ross and V. Korenchevsky. —p. 349.
Hemoglobinization of Erythroblasts. M. C. G. Israëls.—p. 361.
Venom-Lecithin Reagent for Accelerated Clotting Test (Prothrombin Time). Felicity C. G. Hobson and L. J. Witts.—p. 367.

Lancet, London

1:745-776 (June 14) 1941

Brain and Mind: Philosophic Approach to Psychiatry. W. R. Brain.—p. 745.
*Undescended Testicle. R. E. Smith.—p. 747.
*Reduction of Dust-Borne Bacteria in Ward by Treating Floor and Bedclothes. M. van den Ende and E. T. C. Spooner.—p. 751.
*Outbreak of Poliomyelitis: Use of Sulfapyridine and Convalescent Serum in Treatment. S. Miller and S. Wray.—p. 753.
Fixation of Fractured Vertebrae. H. H. Greenwood.—p. 755.

Undescended Testicle.—Among approximately 1,000 boys from 9 to 18 years of age Smith found that 11 of 511 between 12 and 15 years of age had undescended testicles. Descent occurred in 8, spontaneously in 7 and by operation in 1. Five other boys had an associated hernia, making it probable that the testicles will not descend spontaneously. Nineteen other boys were known to have had undescended testicles at some time before the examination. At a second examination in 1940 undescended testicles were less common as age progressed. Of 705 boys more than 14 years of age 4, or 0.6 per cent, had undescended testicles, and of 267 aged 13 years or less there were 9, or 3.3 per cent, with undescended testicles. Study of 27 boys in whom one or both testicles have descended spontaneously and of 23 boys in whom descent has not taken place indicates that only undescended testicles associated with hernia should be treated surgically and that the others should be given the chance to descend spontaneously at puberty. If they fail to do so, operation should be performed without delay. The testicle which does not descend at puberty is generally prevented from doing so because of anatomic obstruction. The testicle is usually arrested at the external inguinal ring, at the internal inguinal ring or at the neck of the scrotum. The surgeon's task is made easier by endocrine therapy, under which the testicle hypertrophies and circulation increases. Fragile spermatic blood vessels are able to withstand the strain of being stretched when the testicle is inserted into the scrotum. Usually one postoperative course of endocrine therapy will cause the testicle to enlarge further and to maintain its new position. Puberty is the ideal age for operation.

Dust-Borne Bacteria from Bedclothes.—From a comparison of plates exposed before and after the bedclothes and the floor of a female ward were treated with liquid petrolatum, van den Ende and Spooner find that after treatment the dust-borne bacteria were reduced. For control after treatment a second female ward was used. The experiment included the oiling of the ward floor with spindle oil and the treating of blankets, sheets, counterpanes and pillow cases with 30 per cent liquid petrolatum in "white spirit" in the hospital laundry. Sample plates made during the succeeding days in the ward with the treated floor and bedclothes showed a general reduction in aerial organisms, and especially almost complete elimination of the peaks which correspond to bedmaking and sweeping. Dust plates made before the treatment of bedding showed that the oiling of floors alone did not significantly reduce dust-borne bacteria. The application of oil from solution in white spirit is at present not a practicable procedure in hospital laundries. The study suggests the advisability of further research and the devising of suitable methods of applying liquid petrolatum to bedding.

Sulfapyridine for Poliomyelitis.—Miller and Wray discuss the treatment in cases of poliomyelitis occurring during the summer of 1940. During the first three months of the epidemic, from June through August, there were 75 cases in the borough of Harrogate and 30 in the surrounding rural districts. At the outbreak of the epidemic, treatment was largely symptomatic and close attention was paid to splinting and other means of support. The earlier results were disquieting. Later in the epidemic sulfapyridine was tried, at first alone and later in combination with convalescent poliomyelitis serum; the response seemed to show a definite advance, as the attack was controlled rapidly. Toward the end of the epidemic the authors' plan of treatment with sulfapyridine and serum therapy was as follows: 1. Patients showing malaise or indefinite pyrexia without apparent cause were given sulfapyridine by mouth. 2. Those showing the earlier manifestations of the infection received in addition convalescent poliomyelitis serum. Initially 2 grains (0.13 Gm.) of sulfapyridine was given by mouth and 20 cc. of convalescent serum intramuscularly, and thereafter 1 grain (0.06 Gm.) of the drug was given at intervals of four hours until the temperature settled, unless there were serious contraindications. Occasionally the dose of serum was repeated once or twice. 3. Patients presenting acute symptoms with impending or already developed paralysis were given initially 2 or 3 grains (0.13 or 0.2 Gm.) of sulfapyridine soluble intravenously in physiologic solution of sodium chloride at the earliest possible moment, together with 20 cc. of convalescent serum intramuscularly. The administration of sulfapyridine soluble was repeated at intervals of four hours until 8 to 10 grains (0.5 to 0.65 Gm.) of the drug had been given. A second dose of 20 cc. of the serum was given from eight to ten hours after the first. Next day sulfapyridine soluble and serum were repeated; sometimes in the more severe cases further injections were given on the third day. Modification for children was made according to age. Since this procedure has been adopted the authors have not had serious extension of paralysis in any case, nor have there been any deaths, and such reactions as have occurred have been negligible. They stress the necessity for early diagnosis, for they believe that only then can appropriate treatment avert much of the paralysis.

New Zealand Medical Journal, Wellington

40:151-212 (June) 1941

*Steatorrhea in Infancy. Helen Deem and M. McGeorge.—p. 155.
Tuberculosis in Nurses: Mantoux Text. J. H. North.—p. 165.
Radium in Treatment of Cancer of Cervix. K. Mackenzie.—p. 173.
Convulsive Therapy in Psychoses. R. W. Medlicott.—p. 175.
Postgraduate Obstetric Education in New Zealand. A. Wilson.—p. 184.
Fibrosarcoma of Corpus Cavernosum Penis: Report of Case. H. Gaudin.—p. 188.
Electrical Factor in Renal Metabolism. W. N. Abbott and E. F. Fowler.—p. 190.

Steatorrhea in Infancy.—Deem and McGeorge describe 7 cases of infant steatorrhea, probably due to congenital cystic fibrosis of the pancreas. Two of 4 resulting deaths were caused by respiratory infections; however, all infants showed a tendency to respiratory troubles. In 1 case, necropsy confirmed the diagnosis. Five cases could not be fully investigated but were included because of their clinical resemblance to the proved cases. In many of these cases no gross abnormalities of the pancreas were visible to the naked eye. Microscopically the normal glandular structure was seen to be replaced by large and small cysts, the walls of which were formed of flattened cells. The clinical picture seemed to be the composite result of failure to absorb various foods, especially fats and fat-soluble vitamins. A fat-free or fat-reduced diet, as well as the addition of pancreatin in 2 cases, caused prompt improvement. The laboratory diagnosis depended on the demonstration of the presence of steatorrhea and the absence of trypsin and lipase in the duodenal juice. For the investigation of pancreatic enzyme activity a duodenal tube was adjusted in the duodenum under the fluoroscopic screen and the duodenal contents were aspirated. Therapeutic suggestions are also added to this report.

Practitioner, London

146:289-352 (May) 1941

Etiology and Treatment of Impetigo. A. C. Roxburgh.—p. 289.
Ringworm—Diagnosis and Treatment. D. R. Lewis.—p. 296.
Skin Manifestations in Diseases of Malnutrition (Deficiency Diseases). H. S. Stannus.—p. 303.
Fracture Problem in War Time. St. J. D. Buxton.—p. 311.
Removal of Plasters. A. S. B. Bankart.—p. 317.
Some Wartime Psychologic Problems of Children. W. L. Neustatter.—p. 320.
Prevalent Misconceptions of Pulmonary Tuberculosis. B. C. Thompson.—p. 326.
Modern Treatment of Parkinsonism. M. Critchley.—p. 332.
First Aid Apparatus for Fractured Femur. W. R. Wilson.—p. 335.
Modern Therapeutics: XXIII. Quinine and Allied Drugs in Treatment of Malaria. W. E. Cooke.—p. 338.

Tubercle, London

22:111-134 (May) 1941

Senile Tuberculosis. W. E. Snell.—p. 111.
Detection of Pulmonary Tuberculosis in Army Recruits. A. D. Leigh.—p. 121.

Dermatologica, Basel

83:1-200 (No. 1/3) 1941. **Partial Index**

Present Status of Oral Chemotherapy in Gonorrhea. G. Miescher.—p. 1.
Fluorescence-Microscopic Investigations of the Penetrability of the Skin by Fluorescent Substances. G. Miescher.—p. 50.
Photoactivity of Some Sulfanilamides. W. Burckhardt.—p. 63.
*Reactions Due to Typhoid-Paratyphoid-Tetanus Vaccination. M. Juon.—p. 80.
Innervation of Spinocellular Carcinoma: Case. Y. Pidoux.—p. 90.

Reactions to Typhoid-Paratyphoid-Tetanus Vaccination.—Juon reports 11 cases of cutaneous reactions following the combined typhoid-paratyphoid-tetanus vaccination: eczema 5 cases, psoriasis 2 cases and single cases of erythema nodosum, erythema exsudativum multiforme, alopecia areata and tuberculous gumma. All the reactions with the exception of the last could be explained on the basis of a biotropic reactivation of conditions which had previously existed and were latent at the time of vaccination and which accordingly may have significance as indicating or contraindicating triple vaccination. In the case of the tuberculous gumma round or oval nodules on an inflamed base appeared about two weeks after the last injection, chiefly on the right arm and at the elbow. These were firm at first but eventually yielded a muddy yellowish liquid content. The Pirquet tuberculin test proved slightly positive; the microscopic examination confirmed the tuberculous character of the lesions. The case of postvaccinal alopecia areata suggested the interplay of some other pathogenic mechanism, a disturbance of the neurovegetative system. According to the author, grave accidents resulting from the use of the combined typhoid-paratyphoid-tetanus vaccination, now performed on a large scale in the armies of many countries, seem to be infrequent.

Oto-Rino-Laringologia Italiana, Bologna

10:177-280 (May) 1940. **Partial Index**

*Functions of Heart in Normal Man After Rotatory Stimulation of Normal Vestibular Apparatus: Electrocardiographic Study. T. Rodolfo-Masera.—p. 256.

Normal Heart After Rotatory Stimulation of Labyrinth.—Rodolfo-Masera performed electrocardiographic studies on 16 normal men to ascertain what changes take place on rotary stimulation of the posterior segment of the labyrinth. He used the Buys-Fischer method by means of which extralabyrinth interferences are excluded. The electrocardiograms were taken in the second lead by means of Boulitte's apparatus, which was arranged in such a manner as to enable the author to take electrocardiograms before, during and after rotation. The head of the patient was maintained immobile during rotation. The author found that the heart beat and the electrocardiographic waves did not change in the course of slow and rapid rotation, sudden arrest from rapid rotation, the various phases of postrotatory nystagmus and complete rest three minutes after disappearance of the second phase of postrotatory nystagmus. The insignificant variations in the electrocardiograms during the test are physiologic and are caused by slight emotion. Variations of this type can be observed in normal persons even when they are at rest and are not affected emotionally. The author concludes that a direct relation between the sympathetic and the posterior segment of the labyrinth does not exist. The electrocardiographic changes observed during the stimulation of the posterior segment of the labyrinth are due to changes in the tonus of the nervous system caused by emotions not related to labyrinth stimulation.

Anales de la Catedra de Patología, Buenos Aires

2:307-524 (Dec.) 1940. **Partial Index**

*Transparietal Aspiration of Tuberculous Cavities of Lung. R. F. Vaccarezza and O. A. Vaccarezza.—p. 349.
*Bronchial Lavage in Early Diagnosis of Cancer of Lung. A. E. Bence.—p. 412.
*Eosinophilia in Pulmonary Tuberculosis. R. F. Vaccarezza, S. F. Erdstein and J. C. Rey.—p. 420.

Aspiration of Tuberculous Cavities.—The Vaccarezzas report 8 cases in which transparietal drainage of a tuberculous cavity was practiced. The postoperative period varied between six weeks and sixteen months. The treatment produced immediate subjective improvement which lasted for several months in all of the cases. Cavernoscopy showed the presence of a heavy layer of caseous material which contained numerous tubercle bacilli. The treatment was discontinued in 1 case in which the catheter was not tolerated. In 2 cases the cavity diminished in size and the general condition improved. In another case a clinical recovery was obtained which has lasted up to now, more than six months after discontinuation of the drainage. The treatment failed in 4 cases. Failure was due in 2 cases to lack of parenchyma about the large cavity. In the other 2 cases the large cavity was circumscribed by atelectatic tissue and normal parenchyma. The cavity was not evident in the roentgenogram for six months. After a period of general improvement lasting six months, the large cavity reopened and new cavities appeared in the parenchyma about the old one. The authors suggest that intracavitary aspiration produces distention of the atelectatic tissue and of the parenchyma about the cavity. The local distention is sufficient to cause development of new cavities about the retracting one. The larger the cavity the more acute the local hyperdistention about the cavity and the greater the danger of development of new cavities. Increased distention of atelectatic tissue does not prevent increased distention of the parenchyma about the atelectatic zone. Microscopic studies demonstrated that a layer of epithelial tissue may be formed on the walls of cavities treated by aspiration and that aspiration does not stimulate local vasodilatation and increased blood supply. The blood supply of the walls of tuberculous cavities is naturally increased except when the cavities are in the phase of infiltration. Definite indications for this therapy have not been established. Absolute indications are: (1) adhesion of pleura to the lung to be traversed by the catheter, (2) isolated cavities partially or completely circumscribed by parenchyma or atelectatic tissue, the disease process being quiescent, (3) much increased intracavitary tension, (4) good general condition, absence of syphilis, the walls of the cavity appearing clean on cavernoscopy. Contraindications are free pleura, lesions about the cavity, active tuberculosis, diminished intracavitary pressure and poor surgical condition.

Bronchial Lavage in Cancer of Lung.—Bence directs attention to the value of bronchial lavage during bronchoscopy for diagnosis of incipient cancer of the lung. The procedure has the same value as biopsy. Incipient cancer of the lung is seen as an infiltration of the bronchial mucosa which bleeds during bronchoscopy. The blood and minute fragments of the mucosa about the bronchoscope contain cancerous cells, which may be identified in microscopic preparations. These fragments may be aspirated with the bronchoscope with the aid of lavage. The latter is done through Higuet's bronchoscope, which has two branches. Twenty cc. of physiologic solution of sodium chloride is injected through one of the branches and is aspirated through the other. The 5 patients observed by the author presented neither clinical symptoms nor roentgen signs of cancer but complained of moderate hemoptysis. The diagnosis of cancer from lavage made in all 5 was verified in 1 case by biopsy and in 2 cases by the evolution of the disease, while the remaining two are too recent to be verified.

Eosinophilia in Pulmonary Tuberculosis.—Vaccarezza and his associates subjected a group of patients with pulmonary tuberculosis and a group of normal persons to the Brosamlem-Michailon test for eosinophilia by injecting 0.2 mg. of tuberculin. The test was positive in all of the patients and negative in all normal persons. A positive reaction manifested itself by an early eosinopenia and a later hypereosinophilia. The early phase appeared within fifteen to thirty minutes after the injection and increased within thirty to forty-five minutes. The late phase appeared three hours after the injection, increased after nine hours and lasted for twenty-four hours. An intravenous injection of 10 units of insulin caused lowering of the eosinophils and was followed by a favorable general reaction. Intravenous injection of 10 units of insulin combined with a subcutaneous injection of 0.2 mg. of tuberculin prevented the tuberculin effect on the eosinophils. Neither early eosinopenia nor later hypereosinophilia occurred. A group of patients with pulmonary tuberculosis and persistent spontaneous hypereosinophilia were given daily intravenous injections of 10 units of insulin for five consecutive days and three or five more injections at intervals of

three days. Hypereosinophilia was controlled for a long time. The greater the hypereosinophilia before the treatment, the better the result. A favorable general reaction followed. Spontaneous hypoeosinophilia in pulmonary tuberculosis indicates organic instability. The condition is of an allergic nature. The progress of pulmonary tuberculosis depends on a selective allergic reaction of the parasympathetic segment, which is controllable by stimulating a defensive reaction of the sympathetic by insulin treatment. Just as hypereosinophilia indicates predominance of the parasympathetic allergic reaction, normal eosinophilia after insulin treatment indicates predominance of the defensive antiallergic reaction. The treatment causes a more or less prolonged favorable organic reaction in the course of which the patient reacts favorably to proper medical or surgical therapy.

Hospital, Rio de Janeiro

19:681-842 (May) 1941. **Partial Index**

*Vitamin K in Surgery. R. Tourinho.—p. 755.

Vitamin K in Surgery.—Tourinho found hypothrombogenemia in 2 patients exhibiting a hemorrhagic tendency. The patients were jaundiced from disease of the liver or the gallbladder. Vitamin K, administered in doses of 4 mg. at intervals of three days up to a total of 32 mg., normalized the thrombogen content of the blood. The coagulation time of the blood was found to be retarded in 10 patients about to undergo an operation. They were given a daily injection of 4 mg. of vitamin K up to 16 to 24 mg. The coagulation time of the blood became normal. All of the operations were performed with minimal loss of blood. Vitamin K is indicated in the preoperative period of any operation in which bleeding is anticipated. To patients with normal thrombogenemia vitamin K is administered two to five days before the operation. Large doses of vitamin K and transfusion are indicated in cases in which the amount of thrombogen is diminished and actual hemorrhage is present. In no case should an operation be performed unless a normal amount of thrombogen in the blood is attained by the administration of vitamin K. Vitamin K is indicated as an emergency treatment of surgical hemorrhage. The coagulation time of the blood improves within the first fifteen minutes after the injection and more so for the two hours after the injection. The early results of a single dose are transient. Administration of vitamin K in the preoperative period corrected irregular menstruation in a girl who suffered from a gynecologic disorder, controlled hematuria in a patient with urologic disease, and controlled rectal bleeding in a patient with hemorrhagic rectitis. The author believes that vitamin K stimulates liver function for formation of thrombogen and regulation of thrombogen metabolism.

Beiträge zur Klinik der Tuberkulose, Berlin

95:1-94 (June 25) 1940. **Partial Index**

Question of Temporary Eosinophilic Pulmonary Infiltrations. H. Schulze.—p. 1.

*Importance of Discharging Bronchus for Suction Drainage of Cavities. A. Schuberth.—p. 31.

Air Pressure Inside of Tuberculous Cavities. W. Kayser.—p. 43.

Thoracocautery in Simultaneously Bilateral Pneumothorax. D. Michetti and W. Küchler.—p. 50.

*Concurrence of Pulmonary Tuberculosis and Pregnancy. M. Müller. —p. 56.

Pneumolysis with Subsequent Extrapleural Pneumothorax or Oleothorax. F. Anstett and E. Markgraf.—p. 78.

Avoidability of Tuberculosis. W. Büttner and I. Gottberg-Schlaadt. —p. 85.

Discharging Bronchus in Suction Drainage.—According to Schuberth, the condition and the behavior of the discharging bronchus or bronchi of a tuberculous cavity are of a vital importance in the cure of the cavity. The bronchus discharges the contents of a cavity and carries air into it. Clinical and roentgenologic observations and investigations of the gas pressure inside the cavity indicate that complete closure of the bronchus produces favorable conditions for the spontaneous shrinkage of the cavity. Recent pathologic anatomic investigations likewise supports this observation. In the majority of cavities, however, the discharging bronchi permit the passage of air, but the permeability is not sufficient to adjust the passage of air to the respiratory movements. This results in an effect somewhat like that of a valve mechanism and produces conditions unfavorable for a spontaneous cure of the cavity. Suction drainage can change these unfavorable conditions so as to promote shrinkage. By continuous suction which results in negative pressure the walls of the cavity are gradually shifted; this causes displacement of the discharging bronchus and reduction of its permeability, which in turn increases the suction so that finally shrinkage of the cavity is obtained. The discharging bronchus can thus be entirely excluded by the shrinking cavity so that it terminates blindly. This can be demonstrated in roentgenograms of favorable cases. Thus it is not necessary that the discharging bronchus be obliterated by changes in its mucosa, although this would further favor suction drainage. This behavior of the discharging bronchus can be demonstrated by a series of tomographs and by continuous registration of pressure changes within the cavity. A manometer attached to the cavity catheter will further corroborate this observation. Such measurements also reveal the extent of harmful effects exerted on the cavity by breathing, coughing, hawking and the exertion of the abdominal muscles. The author directs attention to the valvelike behavior of the discharging bronchus when the cavity is under considerable excess pressure. Such cavities appear round in the roentgenogram. Introduction of a catheter causes collapse and disappearance of the rounded shape.

Pulmonary Tuberculosis and Pregnancy.—Opinion regarding the influence of pregnancy on tuberculosis has undergone change. It was believed at one time that pregnancy exerts a favorable effect, at another time that it exerts no influence, and again that it represents a severe complication. The last opinion is most prevalent. Müller reviews observations on 54 tuberculous women who had seventy-six pregnancies, of which fifty-eight were carried to term, twelve were interrupted, four terminated in miscarriage and two terminated in abortion. He considers open tuberculosis, preexisting open tuberculosis and the presence of extensive lesions in closed active tuberculosis indications for interruption of pregnancy if an exacerbation takes place in the first few months of gestation. Interruption is indicated also in the presence of bilateral pneumothorax, even if there is no exacerbation of the tuberculous process during the first few months. In unilateral pneumothorax interruption is advisable if the pneumothorax is not well adjusted and if the pulmonary process is quite extensive and shows little tendency to heal. In incurable severe tuberculosis, interruption is always indicated. The author never resorted to interruption in inactive tuberculosis. In the author's hospital only 4 patients for whom interruption was not done developed severe exacerbation, and 2 of these should not be included because the pregnancy had become known too late. He does not believe that the existence of tuberculosis is a sufficient reason for doing away with an undesirable pregnancy, nor does he agree with those who insist that tuberculosis is never an indication for the interruption of pregnancy. The last attitude is wrong not only with regard to the welfare of the woman herself but also from the standpoint of population policy, because for the sake of one child it may make an invalid of a woman who later might have borne several children.

Der Deutsche Militärarzt, Berlin

5:305-352 (Aug.) 1940. **Partial Index**

Protective Vaccination of Armed Forces. T. Wohlfeil and J. Maass.—p. 305.

*Active Immunization with Combination Vaccines. D. Bartos.—p. 321.

Hygiene of Water During War. W. Schmidt-Lange.—p. 324.

Technic of Determination of Blood Groups in Army. H. Knauer.—p. 333.

Role of Kidneys in Localization of Disease in Acute and Chronic Articular Rheumatism. P. Backert.—p. 341.

Immediate Treatment of Gonorrhea by Means of Albucid (Acetylsulfanilamide). K. Stiller.—p. 346.

Active Immunization with Combination Vaccines.—Bartos presents a study of combinations of vaccines and of single vaccines: (1) typhoid, paratyphoid A, paratyphoid B, Schottmüller, Breslau, Gärtner and cholera; (2) typhoid; (3) typhoid, paratyphoid A, paratyphoid B; (4) cholera; (5) Breslau, and (6) Gärtner. He killed bacterial cultures by adding 0.4 per cent solution of mercury bichloride to the bacterial suspensions in a ratio of 1:20. The simple typhoid vaccine, number 2,

proved much less toxic than did the combination vaccine number 1; mice tolerated several times the dose of the simple vaccine, which proved lethal when combined. Formation of agglutinins was studied on rabbits and the impression was gained that the combination vaccines cause an earlier and stronger formation of agglutinins than do simple vaccines, but the decrease in efficacy likewise seems more rapid. The different heterogenic antigens act on one another as nonspecific irritants do, and the inflammatory reaction which develops at the site of vaccination plays the most important role. The nonspecific irritation by mercury bichloride should not be disregarded, because it is known that vaccines prepared with mercury bichloride cause a more rapid and stronger agglutinin reaction than do vaccines in which the bacteria have been killed with heat. Studies on human subjects revealed that combination vaccines cause stronger reactions than do single vaccines. The type and measure of immunity produced by a combination vaccine is determined by its composition. In order to obtain the desired degree of immunity the customary bacterial quantity must be introduced, because the synergism between the antigens is not so great that the required number of organisms can be greatly reduced. A pronounced antagonism between the different antigens could not be ascertained. Combining of vaccines calls for certain restrictions, because the likelihood of toxic reactions is somewhat increased by the combination, and the contraindications must therefore be estimated carefully. In deciding on how to combine the vaccines, it is important to bear in mind that immunity is not of uniform duration in different infectious diseases and that repeated vaccinations are required to insure adequate immunity. Additional laboratory research and epidemiologic observations are necessary before combined vaccinations can find extensive practical application.

Deutsche medizinische Wochenschrift, Leipzig

67:141-168 (Feb. 7) 1941

*Exophthalmic Goiter and Its Treatment. P. Sunder-Plassmann.—p. 141.
The Thymus Problem: Criticism. H. Hoepke.—p. 146.
The Thymus Problem: Reply. Bomskov.—p. 148.

Exophthalmic Goiter and Its Treatment.—The neurogenic conception of the etiology of the disease, according to Sunder-Plassmann, is generally accepted. The connection between the parenchyma of the thyroid and the nervous system has been clarified by the discovery in the thyroid of a neurohormonal cellular system which is functionally related, by way of the parasympathetic system, with the vascular wall cells and the thyrocytes of the follicles. These neurohormonal cells are distributed throughout the parasympathetic system and the endocrine glands. The neurohormonal cells form an independent parenchyma within the thyroid and determine physiologically or pathologically the output of the thyroid. The significant factor in exophthalmic goiter is the unrestrained absorption of colloid material, both the stored and that which continues to be secreted. The posterior lobe of the hypophysis and the thymus are also involved under certain conditions. In operative cases in which iodine had been employed as a conditioning medium the death rate was as low as 1 per cent, compared with a 12 to 13 per cent mortality in iodine-fast cases. Roentgen therapy applied in less severe cases of exophthalmic goiter offers no guaranty of cure. A large number of roentgen-treated patients must subsequently be operated on and create the problem of how much of the roentgenologically damaged goiter tissue should be removed. The author recommends vitamin A and a combined dextrose and insulin medication for the purpose of controlling the toxins arising from the disintegration of albumin under roentgen therapy. Iodine is particularly effective in "thyrotoxic coma" occurring spontaneously during conservative treatment and in what was formerly called "postoperative reactions." These two comatose states, while not identical, have in common severe hepatic damage and an extreme upset of the sympathetic nervous system and may be due to endocrine insufficiency, caused in the one case by the unrestricted absorption by neurohormonal cells and in the other by thyroidectomy. Iodine therapy may be supported by intravenous infusion of dextrose or hypertonic solution of sodium chloride. No diagnostic means exists for detecting the impending coma. An increase in the creatinuria levels (up to 15 per cent) manifested by unrest, vomiting and diarrhea may provide an indication which, however, cannot be always relied on. Prostigmine bromide serves as a temporary adjuvant in adynamia. Moderately painful arthritis reacts favorably to iodine and disappears after thyroidectomy.

Medizinische Klinik, Berlin

37:153-180 (Feb. 14) 1941. **Partial Index**

Skin Diseases and Their Treatment in Military Service. Aretz.—p. 153.
Injuries of Region of Oral Cavity by Strong Electric Current. Lindemann and H. Lempke.—p. 155.
*Spontaneous Pneumothorax: Etiology, Pathogenesis and Therapy. A. Sattler.—p. 160.
Pain in Sciatic Nerve as Symptom of Obliterating Endarteritis. D. Pančenko.—p. 163.
Combined Calcium and Vitamin C Treatment. R. Krejtscha.—p. 165.
Chemotherapy of Bacterial Infections. R. Hilgermann.—p. 167.

Spontaneous Pneumothorax.—Idiopathic pneumothorax is seen as a rule in apparently healthy youths. It may lapse and persist for years. Thoracoscopy reveals a subpleural formation of vesicles which vary in size from a cherry to a man's fist. They may appear in groups or disseminated over both lungs; they are usually thin walled and rupture. The development of the vesicles according to Fischer-Wasels is caused by a stenosis of small bronchi by cicatricial processes with the formation of a valve mechanism. Air enters but cannot completely escape on account of the valve action. The result is progressive distention and destruction of vesicles. Congenital malformation may be responsible in infants and children; in adults the pathogenic factors are acquired. Removal of strands and adhesions promptly closes the fistula and terminates the pneumothorax. Artificial production of an exudative pleurisy is an effective therapeutic measure in persisting spontaneous pneumothorax. If the exudate reaches the level of the fistulous opening, the latter may become occluded by fibrin deposits. Resulting pleural obliteration prevents relapse. In place of this rather heroic method Sattler proposes his "aimed" pleural irritation. He introduces, under optic control, an irritating solution on the diseased area in the pleura. If necessary this "aimed" irritation can be combined with removal of adhesions. Subsequent thoracoscopy discloses induration or complete obliteration of vesicles.

Wiener klinische Wochenschrift, Vienna

54:63-86 (Jan. 24) 1941. **Partial Index**

Modern Irradiation of Cutaneous Cancer. J. Wendlberger.—p. 63.
*Treatment of Apoplexy. R. Singer.—p. 65.
Present Status of Thoracocautery. H. Weber.—p. 68.
Serologic Changes and Treatment of Allergic Disorders. W. Fröhlich.—p. 73.

Treatment of Apoplexy.—Singer points out that in the presence of arteriosclerosis of the cerebral vessels necropsy frequently discloses cerebral edema. It seemed reasonable to expect that removal of this edema would be followed by improvement. Since myocardial damage is likewise frequent in these cases, it seemed advisable to improve the action of the dehydrating agent by simultaneous administration of digitalis. The author gives the apoplectic patient an intravenous injection of 1 cc. of salyrgan. The injection is repeated up to five times at intervals of from five to seven days and the dose is increased to 2 cc. Patients who seemed to be in a hopeless condition, such as those with a ventricular hemorrhage or a similar severe complication, patients whose conditions became noticeably worse in the course of three days of observation and those in whom the apoplexy had existed for more than three weeks were not subjected to this therapy. It was employed for 28 patients whose ages varied between 34 and 78 years. In 17 the therapy produced a considerable improvement. The improvement always followed from one to three days after the dehydration. In 5 other cases the effect was no better than that obtained with the older regimen. Two patients showed no improvement, and 4 others died. Complicating diseases, in 1 case pneumonia, in several cases hypostatic bronchitis and in many myocardiac defects, were likewise favorably influenced by the dehydrating treatment.

Wiener medizinische Wochenschrift, Vienna

91:21-38 (Jan. 11) 1941

Sport for Healthy and Physically Handicapped Child. W. Aberle.—p. 21.
*Conservative Treatment of Habitual Luxation of Shoulder. B. Heger.—p. 22.
Sport as Cause and Cure of Disease. H. Mussgnug.—p. 24.
Bilateral Hematogenic Renal Diseases of Traumatic Origin and Their Estimation. O. Lürmann.—p. 29.

Conservative Treatment of Habitual Luxation of Shoulder.—According to Heger, dislocation of the shoulder is a frequent sport injury. The relatively small glenoid cavity, a wide, loose capsule and trauma at the elbow or directly to the shoulder are among the factors responsible for the frequency of luxation of the shoulder joint. The complicated ligamentomuscular apparatus is stretched or even torn during dislocations, and the capsular tear offers an insurmountable obstacle to reposition. The dislocation together with belated reposition is often responsible for habitual luxation of the shoulder joint, which the author defines as repeated dislocation in case of direct or indirect exertion of slight force or in case of extensive movement. The author considers only the traumatic forms, disregarding the pathologic luxations (injuries of the spinal cord, tabes syringomyelia and so on). The great number of therapeutic methods that have been suggested, such as plastic operations on bones, fascia and muscles, shortening of the capsule by puckering or excision, formation of capsular folds by means of the deltoid and more radical methods resulting in arthrodesis, indicate that the therapy of habitual luxation is difficult. Treatments by means of tapes and pressure pads are unsuccessful, because they limit the motility of the arm and produce atrophies. Prolonged immobilization is to be rejected, particularly that which forces fixation in a direction apparently opposite to that of the luxation, because it leads to ankylosis. Early movement has proved helpful. The method used by the author makes use of this factor. It attempts to produce shrinkage of the capsule by injecting around it the patient's own blood and attempts to strengthen the musculoligamentous apparatus by systematic exercises. The author thinks that failures following similar treatments were caused not so much by the methods as such but rather by their application, the choice of substances and the selection of cases. To select the cases roentgenoscopy is advisable, because all cases in which there are defects in the bony part of the joint are unsuitable for this treatment, as are also cases in which severe tears of muscles and ligaments have occurred. The injections are given once every week and consist of 6 cc. of the patient's own blood and 4 cc. of the cytozym of hogs' lungs. They are introduced at several points through the deltoid muscle to the articular capsule. The author thinks that the cytozym makes the joint firmer by causing local irritation. Every injection is followed by twenty-four hours of immobilization. Beginning after the second injection, resistance exercises in the form of abduction and adduction and of pressing the arm forward and backward are begun and are gradually increased. At the end of seven injections the entire capsule has usually been surrounded by injections. The author does not think that this method will do away entirely with the surgical treatments of habitual luxation of the shoulder joint but that in suitable cases, particularly in athletes, the described treatment should be tried first.

Archiv für Japanische Chirurgie, Kyoto

18:267-510 (March) 1941. **Partial Index**

*Studies on Anorectal Immunization. T. Torikata.—p. 267.

Anorectal Immunization.—Torikata believes that the temporary increase in the antibody titers appearing within seven days in the blood of animals injected with the toxin of a microorganism is not a true criterion of active immunization. He is of the opinion that the true antibody formation requires approximately sixty days (rabbits) and that the additional increase in the antibody titers which occurs only after reinfection (subcutaneous or intravenous injection) is the only true criterion for quantitative indication of the effect of antigen or of immunization methods. As compared with the immunologic effect of orally administered typhoid coctigen, the effect produced by the instillation of the same preparation into the lower portion (about 10 cm. from the anus) of the colon was found to be quantitatively the greater. The coctigen is far superior to vaccine in the antibody formation, since in the former the inhibitory factor (impedin) has been completely destroyed. The active principle of antigen is identified as the impedin-free toxin of an organism, namely the water-soluble particles of the bacterial lipoid and protein bodies. Vaccines containing intact micro-organisms are usually ineffective as immunizing agents. The minimal time for the establishment of active immunity following anorectal administration of typhoid coctigen was found to be about four weeks. As ascertained by titration of the blood plasma, the antibody formation is more or less specific for the particular organism used, but there is also a certain degree of group specificity in immune reaction. Of these, the antibody formation specific for tubercle bacilli appears to be definitely specific for other organisms as well, though to a less pronounced degree. The increase in the opsonin content of the blood can also be demonstrated forty-eight hours after anorectal administration of typhoid coctigen preceded by the increased phagocytic activities of the local macrophages of the intestine and other organs. The process of antibody production appears to be due first to the ingestion and digestion of antigen by the reticulo-endothelial elements and later by the appearance of the active generalized antibody formation in the body. The highly specialized cells, such as the epithelium, in no way participate in active immunization. This explains the greater amount of phagocytic activity on the part of the local macrophages and hence a greater and more effective degree of immunization by the anorectal instillation of the antigen, since the duration of the actual contact of the antigen with the local histiocytes is much longer than by other methods of administration.

Bulletin of the Naval Medical Association, Tokyo

30:197-262 (April) 1941. **Partial Index**

*Subcutaneous Cellulitis Caused by Coccobacillus Foetidus Ozaenae (Peréz). S. Okuyama.—p. 222.
Pathology of Pernicious Anemia (Biermer). J. Fukuda.—p. 245.

Cellulitis Due to Peréz's Coccobacillus.—Okuyama reports the case of a 63 year old woman, who sustained a severe trauma at a public bath house. The infected area began to swell, with increasing pain, until on the fifth day of illness an incision was made. On the eighth day the spreading cellulitis was opened again; a dark colored, foul smelling fluid exuded from the purplish necrotic tissue. There was a considerable amount of gas formation at the site of infection. Culture of the exudate led to the isolation of Coccobacillus foetidus ozaenae (Peréz), identifiable by the production of a foul smelling gas and the characteristic motile, gram-negative and short rod-like morphology.

Kekkaku, Tokyo

19:59-150 (Feb.) 1941. **Partial Index**

*Squalin ($C_{30}H_{50}$) and Tuberculosis. T. Takasaki and M. Kogami.—p. 77.

Squalin in Tuberculosis.—Squalin is an isomer of squalene, the nonsaponifiable fraction of oily fat, and a highly unsaturated hydrocarbon, having an elementary composition of $C_{30}H_{50}$. It is found chiefly in the oil extracted from shark liver. Of the two isomers, one is biologically active (squalin) and the other inactive (squalene). Intraperitoneal injection of squalin in doses of 0.5 cc. in healthy rabbits causes a transient leukocytosis. Squalin can be demonstrated in tissues by microchemical fat staining technics, such as iodide and bromide reactions, as well as by an oxidase positive reaction after subcutaneous, intravenous and intratracheal administrations. The most significant effect of squalin administration in experimentally infected tuberculous animals (rabbit, guinea pig) observed by Takasaki and Kogami is the appearance of acid-fast granular bodies in the cytoplasm of mononuclear cells in various organs, paralleling the inhibitory effect of the tuberculous process. The acid-fast granules in the cytoplasm of these cells are frequently present in association with acid-fast tubercle bacilli ingested by these cells. The appearance of these granules may then be regarded as a manifestation of accelerated functional activity of the cellular elements as a defense reaction against tuberculous infection.

Okayama Igakkai Zasshi, Okayama

53:401-678 (March) 1941. **Partial Index**

*Action of Guanidine and Its Cyclic Derivatives on the Gastric Motility of Rabbits (52d General Meeting, Okayama Medical Society, Feb. 25, 1941). Y. Okushima.—p. 650.

Guanidine and Gastric Motility.—Okushima reports observations on the effect of guanidine and its cyclic compounds on gastric motility in rabbits. The preparations employed in this investigation were (1) guanidine hydrochloride, (2) benzylguanidine, (3) phenylethylguanidine sulfate and (4) pentamethyleneguanidine. Though somewhat variable in potency, constant concentrations of all these drugs exert a stimulating effect on the isolated rabbit stomach prepared according to the method of Megnus. The minimum effective dose for each of these drugs was found to be: guanidine 0.05 per cent, phenylethylguanidine 0.005 per cent, pentamethyleneguanidine 0.001 per cent, benzylguanidine 0.0005 per cent. This stimulating effect is probably the result of direct stimulation of gastric musculature and in no way due to parasympathetic involvement, since the effect is not influenced by atropine. With a greatly increased dose (guanidine 1 to 5 per cent, benzylguanidine 0.5 to 1 per cent) the motility is at first accelerated and later becomes sluggish until it is completely abolished. Application of barium at this time has no effect; hence the loss of motility under these circumstances is due to muscle paralysis. When the drugs are administered intravenously, the gastric motility is definitely inhibited. The minimal effective doses were found to be 5 mg. per kilogram of body weight for guanidine, phenylethylguanidine and pentamethyleneguanidine and 0.5 mg. per kilogram of body weight for benzylguanidine. This inhibitory effect is present after bilateral vagotomy and appears in rabbits previously treated with phenobarbital; a slightly less pronounced inhibitory effect occurs after the bilateral section of visceral splanchnic nerves below the diaphragm either with or without vagotomy. After ligation of the abdominal aorta, application of the drugs still causes the inhibitory effect. On the contrary, bilateral adrenalectomy completely abolishes the inhibitory effect of these drugs on the rabbit stomach. These observations lead the author to conclude that the action of guanidine and its derivatives on gastric musculature is peripheral in nature and probably related to the accelerated secretion of epinephrine.

Sei-I-Kai Medical Journal, Tokyo

59:1026-1231 (Oct.) 1940. **Partial Index**

*Concerning the Index of Enchondral Ossification. M. Oya.—p. 1195.

Enchondral Ossification Index.—The author stresses the usefulness, in estimating disturbances in ossification on the long bones, of a quotient obtained by dividing the width of the proliferative cartilage zone by that of the preparatory calcification zone. This quotient has been named the index of enchondral ossification by Oya and can be applied both in experimental animals and in man. In newborn infants the value of the enchondral ossification index is in the neighborhood of 0.6 and gradually increases, so that after fifteen months of age the index is always over 1.0. Some variations are found from case to case, even in normal subjects, particularly during infancy and childhood; but in adults over 20 years of age the normal index is usually 1.5 or slightly above. In rickets the index is decidedly depressed.

Taiwan Igakkai Zassi, Taihoku, Formosa

40:189-426 (Feb.) 1941. **Partial Index**

*Therapeutic Experiments of Paragonimiasis (Lung Flukes) with Azosulfamide and Emetine Hydrochloride. M. Ro and S. Yokogawa.—p. 268.

*A Critical Study of Sodium Santoninate in Liver Function Test. K. Ishii and T. Oh.—p. 334.

Azosulfamide and Emetine Hydrochloride for Lung Flukes.—Ro and Yokogawa investigated the combined effect of azosulfamide and emetine hydrochloride on experimental paragonimiasis (lung flukes) in dogs, basing their objective proof on the nature of the parasites in variously treated animals. Previously (1939) the authors had reported a definitely beneficial effect of this combination treatment in 9 cases of paragonimiasis in man, and confirmatory reports have since been published by others. The effect of this combination treatment manifests itself within seven to nine days, first by the death of adult parasites and then by a rapid destruction and absorption of the flukes. Microscopically the therapeutic effect was characterized by congestion and hemorrhages of the capillaries in the wall of the cyst as well as conspicuous infiltration of large mononuclear and polymorphonuclear leukocytes, the changes not occurring in nontreated patients or in those treated only with emetine hydrochloride. Furthermore, there was considerable evidence of disturbance in the process of egg formation. While gonads (ovaries, testes, Mehlis' glands) degenerated early, almost no effect was seen on the yolk glands, which if anything showed evidence of increased function, so that the uterus and the vitelline sack were remarkably distended with yolk cells. The accumulated yolk cells frequently broke out into the excretory bladder, destroying portions of that body with progressive degenerative changes, thus causing the destruction of the anlage of the parasite. In cases in which this combination was employed, the areas immediately adjacent to the dead fluke were acutely inflamed, with cellular infiltration deeply invading the body of the parasite, while in control cases no such evidence was discernible. The efficacy of the treatment may be due to the combined parasiticidal action of emetine hydrochloride and of some toxic products of azosulfamide. While the specific parasiticidal action of the latter drug is still unknown, it appears to be related to the cellular infiltration, especially of the polymorphonuclear leukocytes in the foci.

Sodium Santoninate in Liver Function Test.—Ishii and Oh introduce a slight modification in the liver function test, utilizing for its criterion the excretion of injected sodium santoninate in the urine. On the morning of the test, following a twelve hour period of starvation, the patient was instructed to empty the bladder completely and then drink 200 cc. of water. Thirty minutes after the water was given, 1 cc. of 10 per cent solution of sodium santoninate was injected intravenously and the urine collected every ten minutes thereafter. As determined by the development of a red coloration on addition of sodium hydroxide, the initial excretion of the drug was tested. The samples of urine were collected for five hours at hourly intervals and the amount of the drug estimated in the Autenrieth colorimeter, a solution of 0.015 per cent azorubin S and 0.015 per cent orange G in equal portions being used for the standard. In testing 28 normal subjects and 15 patients with various types of liver disease, chiefly cancer and cirrhosis, the authors conclude that persons with normal liver function show initial excretion of the injected drug invariably about ten minutes after the administration, whereas patients with liver disease always have a delayed time of initial excretion. Patients with disturbed liver function likewise have delayed time of maximum excretion. While in normal subjects the rate of excretion is relatively constant, in patients with disturbances of the liver there is a considerable degree of fluctuation from case to case. It is therefore preferable to determine the initial excretion time of the drug for the evaluation of hepatic function rather than to estimate the total excretion at stated intervals.

Sovetskaya Meditsina, Moscow

Pp. 1-56 (No. 1) 1941. **Partial Index**

Health Plan for 1941. S. A. Kolesnikov.—p. 3.

*Local Anesthesia Therapy of War Wounds. A. V. Vishnevskiy.—p. 10.

Problem of Pain. M. M. Gubergrits.—p. 15.

Some Data Concerning Treatment of Ulcers of Lower Extremities. P. O. Eolyan.—p. 19.

Effectiveness of Physical Therapy in Treatment of Injuries of the Peripheral Nervous System. F. K. Kessel.—p. 21.

Therapeutic Transplantation of Conserved Homoplastic Peritoneal Tissue. M. V. Dunye.—p. 24.

Barker's Modification of Girard's Herniotomy. A. T. Michelson.—p. 27.

Local Anesthesia Therapy of War Wounds.—Local anesthesia, according to Vishnevskiy, is intended not only to interrupt the link between the center and the periphery within the limits of a reflex arc but also to act on the general neurotrophic regulation through mild stimulation of the nervous system. The aim of his "creeping infiltration" is to introduce large amounts of a weak dilution of the anesthetic into tissue

spaces with the view of blocking large areas of nerve elements and their ganglions rather than to interrupt conduction trunks. The effect of various forms of blocking on the inflammatory processes are as follows: (*a*) A concealed inflammation becomes manifest, delimited and undergoes resolution; (*b*) an inflammatory process in the stage of serous inflammation may be arrested; (*c*) abscesses become more rapidly delimited, break down and undergo resolution; (*d*) the subacute and chronic infiltrating inflammatory processes may be strikingly influenced or cured. These observations led to the formulation of a working hypothesis that of the possibility of influencing an inflammatory process by means of various types of weak stimuli acting on the vegetative nervous system. Among the pathologic processes influenced by this method the author lists acute lymphadenitis, gonorrheal epididymitis, phlegmon, erysipelas, carbuncle, thrombophlebitis, acute mastitis, osteomyelitis, acute edema of snake bite, scorpion bite and of other poisonous vipers, traumatic brain edema, cerebrospinal meningitis, spontaneous gangrene, hemorrhagic colitis, and so on. A proof of the primary role of the vegetative nervous system in the mechanism of the action of the procaine block is to be seen in the effect obtained in pathologic states characterized by disturbance of tonus. This is true both for spastic and for paralytic states; thus intestinal obstruction of an adynamic or paralytic origin may be relieved by a lumbar block. The same observations were made with regard to the ureter and blood vessels, as for example in spontaneous gangrene and in Raynaud's disease, in which procaine block relieves the spasm. The same effect was observed in hemolytic and anaphylactic shock. The restitution of tone acts in either direction: the spasm is relieved or the depressed tonus is strengthened. Applying his neurotrophic theory of pathogenesis of inflammation to wounds and local suppurative processes, the author concludes that their proper therapy should combine a favorable trophic effect with a bactericidal one. He attempts to accomplish this aim by the local use of a balsamic ointment consisting of juniper tar 5 cc., bismuth tribromphenolate 3 Gm. and sufficient castor oil to make 100 cc. After preliminary cleansing with alcohol, the wound is packed with gauze saturated in this ointment. In extensively infected wounds of soft tissues or of bones, after the removal of the necrotic tissue the wound is carefully tamponed and a plaster of paris cast is applied for from seven to ten days. The author makes the following recommendations for treatment of war wounds: (1) application of local anesthesia in the initial treatment of wounds and open fractures; (2) the use of balsamic ointment dressing in the treatment of infected wounds during the various stages of evacuation; (3) procaine hydrochloride block and the balsamic ointment dressing for anaerobic gas infection; (4) a circular block of an injured extremity as prophylaxis of shock; (5) lumbar procaine hydrochloride blocking to combat shock from extensive trauma, burns, subcutaneous injuries, hemolytic and anaphylactic shock, and (6) procaine hydrochloride block and the balsamic ointment dressing in the treatment of chilblains.

Bibliotek for Laeger, Copenhagen

133:65-92 (March) 1941

*Absorption and Elimination of Sulfanilamide and Related Substances. E. Lundsteen, S. West and J. S. Paaby.—p. 65.

Absorption and Elimination of Sulfonamides.—Lundsteen and his associates found that sulfanilamide, sulfapyridine, sulfathiazole and methylsulfathiazole when administered orally are so rapidly taken up by the organism that a sufficiently high concentration of these substances is usually attained in this way. If nausea or other conditions prevent the administration of sulfapyridine by mouth, sulfapyridine can be given as the soluble sodium combination intravenously, intramuscularly or rectally, but not subcutaneously or intraspinally. Since sulfanilamide preparations pass slowly into the spinal fluid, the authors advise massive doses in meningitis, eventually sulfapyridine intravenously and sulfanilamide intraspinally. Acetylsulfapyridine is absorbed in only slight degree, they say, and sulfapyridine suspended in oil for intramuscular injection must be considered worthless.

Ugeskrift for Læger, Copenhagen

103:345-390 (March 20) 1941

Hyperinsulinism. I. Hypoglycemia and Hyperinsulism. G. Magnussen. —p. 345.

Id. II. Four Cases of Hyperinsulinism. S. Agner, J. Boas and G. Magnussen.—p. 346.

*Id. III. Surgical Treatment of Pancreas Adenomas Producing Insulin (Insulinomas). P. Windfeld.—p. 353.

*Id.: IV. Carbohydrate Metabolism in Hyperinsulinism and Its Medical-Dietetic Treatment. K. Lundbæk.—p. 358.

Case of Hypoglycemia and Asthma: (Preliminary Report). V. A. Christiansen.—p. 364.

Hypoparathyroidism Treated with A. T. 10. M. Jersild.—p. 368.

Melanosis of Colon and Rectum. E. Madsen.—p. 371.

Surgical Treatment of Pancreatic Adenomas.—Windfeld describes the operation and the postoperative course in the 4 cases of hyperinsulinism reported by Agner and his associates. Whipple's technic was followed. The first patient was a man aged 40. An adenoma the size of a hazel nut was removed from the head of the pancreas. Microscopically it was a typical benign insulinoma with abundant cells; the insulin content was between 15 and 20 international units per gram. The day after operation the blood sugar rose to 400 mg. per hundred cubic centimeters. Examination a year later showed the patient to be well and psychically normal. The second patient was a man aged 22. Two adenomas, microscopically typical benign insulinomas, were found in the tail of the pancreas. Cultivation of the tissue failed to establish any insulin activity. The patient was well on discharge, but in two months typical hypoglycemic attacks recurred. Since the attacks were mild and the patient was able to work, dietetic treatment was instituted for the time being. The third patient was a man aged 46. There was an adenoma the size of a cherry in the head of the pancreas. It was microscopically a benign insulinoma with abundant cells and insulin content of 10 international units per gram. The blood sugar rose to 300 mg. per hundred cubic centimeters on the day after operation. Seven months after discharge the patient was well. The last patient was a woman aged 60. An adenoma the size of a hazel nut was removed from the body of the pancreas. The blood sugar rose to 216 mg. per hundred cubic centimeters following the operation and rapidly fell to normal fasting values and remained there. On the thirty-fifth day after the operation death occurred unexpectedly. A large embolus was found in both pulmonary arteries. The author points out that, because of their size and localization, insulinomas can practically never be established roentgenologically. Adenomas in the head of the pancreas are particularly hard to locate, and mobilization of the duodenum may be necessary. Cases have been reported in which the hypoglycemia apparently depended on a hypertrophy and an increase in the number of the islands of Langerhans. The results of resection have usually been poor. If the hypoglycemic attacks cannot be prevented by regulation of the diet, operation is advised. Death may occur in connection with insulin shock in spontaneous hypoglycemia, and in long-continued hypoglycemia irreversible changes gradually take place in the ganglion cells of the brain with resulting persisting psychic disturbances. About one fourth of the insulinomas removed have been malignant with a tendency to metastasize. Treatment with diabetogenic substance from the anterior pituitary is not recommended.

Dietetic Treatment of Hyperinsulinism.—Lundbæk states that in mild cases of hyperinsulinism treatment with abundant carbohydrates may be tried, with frequent small meals and eventual carbohydrate administration between meals. If the attacks continue, also in somewhat more severe cases, treatment with diet low in carbohydrates may be attempted. In such cases hospitalization is necessary, so that the blood sugar curve may be followed for some time. Without hospitalization one cannot determine whether on the diet deficient in carbohydrates a sufficiently lowered insulin sensitivity can be attained, with the consequent high and long-continued postprandial rise in blood sugar; there may also be a danger in taking carbohydrates away from a hypoglycemic patient not under constant medical control. The author believes a diet low in carbohydrates is less rational in cases in which there are pseudodiabetic dextrose tolerance curves on a diet with abundant carbohydrates. If the attacks persist on dietetic treatment of the one kind or the other and the patient is constantly invalided, operation is advised.

Book Notices

Field Surgery in Total War. By Douglas W. Jolly, M.B., Ch.B.N.Z. With a foreword by Surgeon Rear-Admiral G. Gordon-Taylor, O.B.E., M.A., F.R.C.S. Cloth. Price, $3.50. Pp. 242, with 32 illustrations. New York: Paul B. Hoeber, Inc., 1941.

The author discusses his experiences in a forward surgical unit with the Republican army in the recent Spanish civil war. In recording his experiences he has divided his work into two sections, the first dealing with organizational and tactical matters, for the initiating of early definitive treatment and rapid evacuation, while the second section deals with the technical care of the wounded in the forward area. The tactical and organizational section stresses the importance of evacuating all wounded from the battalion aid stations to a classification post, where they are immediately separated into three classes: those requiring operative work within five hours from the time of injury, those not so seriously injured who must be treated within ten hours after injury, and those who can be transported directly to the evacuation hospital. Here the author has developed his "three point forward system," which consists of the classification post, the No. 1 hospital, which is so placed that it can give definite treatment within five hours after incurrence of the wound, and No. 2 hospital, which is so located that it can give treatment within ten hours after injury. Hence we have the No. 1 and the No. 2 hospitals located not with respect to distance from the front but with respect to time lag in evacuation. The second section deals with the technical management of the different classes of wounds. It gives a detailed description of the operative procedure. The book is concluded with an appendix recording the "three point forward system" in action during withdrawal and offensive combat on the Ebro River.

Roentgen Interpretation. By George W. Holmes, M.D., Roentgenologist to the Massachusetts General Hospital, Boston, and Howard E. Ruggles, M.D. Sixth edition. Cloth. Price, $5. Pp. 364, with 246 illustrations. Philadelphia: Lea & Febiger, 1941.

Because of the death of Dr. Howard Ruggles in 1939 it was necessary for Dr. Holmes to prepare the sixth edition of this book without the assistance of his co-author. The first edition of this manual appeared in 1919, and the fact that it has gone through five subsequent editions is ample evidence of the enviable position it has attained in roentgen literature. While the authors' purpose is to present a brief survey of the field of roentgen ray diagnosis, they nevertheless describe in the text the essential and basic roentgen appearances of a large number of pathologic conditions. The general scope of this manual is made possible by the authors' confinement of their description of the roentgen appearance of so many conditions to remarks which are noncontroversial in nature and which are generally accepted by radiologists in this country. The language used is delightfully clear and concise. The bibliography at the end of each chapter contains adequate references to the literature for those who care to go more fully into the conditions described in the text. The illustrations are unusually good and clearly portray the points that the authors desire to demonstrate.

This book, which has stood the test of time, is based on the wide clinical and laboratory experience of the authors and occupies a prominent place as a standard textbook in American roentgen literature and will be found valuable by the student, general practitioner and specialist.

Precedent Book, Surgical Service Peter Bent Brigham Hospital. Paper. Price, $1.25. Pp. 136. Boston, 1941.

New members of the surgical service in Peter Bent Brigham Hospital receive a little book called "Precedent Book," which includes an introduction by the surgeon in chief, Dr. Elliott Cutler. An outline of this type is an invaluable guide to the young man as to what he may or may not do under various circumstances. Following a general statement of the organization of the service comes a section on administrative regulations and special services with detailed notes as to technics and conditions governing the use of such procedures as drugs, enemas, use of the roentgen ray and similar subjects. Especially valuable is the section on records and histories, which indicates the details involved in careful surgical examination. Next is a report on the laboratories, indicating which of these procedures are to be employed, then instructions regarding the operating room and parenteral fluid therapy, and there is a list of suggestions for the members of the house staff in the management of various routine conditions. The details provided include exactly the type of material that saves times and distress for those who are informed. The concluding section, which deals with nursing and social service, will indicate to the resident physicians the responsibilities of these departments.

The University and Public Health Statesmanship. By Arthur P. Hitchens, Harry S. Mustard, Walter S. Leathers and Charles-Edward A. Winslow. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 33. Philadelphia: University of Pennsylvania Press, 1941.

Problems of Intestinal Obstruction. By John P. Peters et al. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 56. Philadelphia: University of Pennsylvania Press, 1941.

Cause and Growth of Cancer. By Louis F. Fieser et al. University of Pennsylvania Bicentennial Conference. Paper. Price, 75 cents. Pp. 64. Philadelphia: University of Pennsylvania Press, 1941.

Dental Caries. By Henry Klein, Carroll E. Palmer, Basil G. Bibby and Elmer V. McCollum. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 53, with illustrations. Philadelphia: University of Pennsylvania Press, 1941.

Hypertension. By Harry Goldblatt, Eugene M. Landis and Alfred W. Adson. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 46. Philadelphia: University of Pennsylvania Press, 1941.

These are additional pamphlets in the University of Pennsylvania Bicentennial Conference Lecture Series, of which some were reviewed in THE JOURNAL, August 2, page 405. As indicated in the previous review, they afford an excellent summary of progress and outline of current knowledge. Physicians will be most interested in those numbers which deal with the science and art of medicine, but they should not overlook the importance of familiarizing themselves with such views pertaining to public health statemanship as are expressed in the collection of addresses under that title. As these are in accord with the traditional altruism of the profession and consistent with maintenance of the quality of medical care, they should continue to receive medical support. When statesmen of the public health ignore the medical profession, as does the essayist who includes in his summary of progress the establishment of industrial hygiene units in public health organizations and ignores the work of the medical profession in this regard, the medical profession will wish to be heard on its own behalf with relation to statesmanship and the public health.

Manual of Clinical Chemistry. By Miriam Reiner, M.Sc., Assistant Chemist to The Mount Sinai Hospital, New York. Introduction by Harry Sobotka, Ph.D., Chemist to The Mount Sinai Hospital, New York. Cloth. Price, $3. Pp. 296, with 18 illustrations. New York: Interscience Publishers, Inc., 1941.

This book, which contains an outline of the methods employed in the laboratory of the Mount Sinai Hospital, had its origin in a few concise directions for interns who were called to perform emergency tests. Gradually the instructions were enlarged into a mimeographed volume for use in the hospital laboratory and in the postgraduate courses in clinical medicine given at the hospital under the auspices of Columbia University. Eventually Reiner's Manual of Clinical Chemistry was evolved. According to the author, many of the procedures contained in the manual "are scattered throughout the literature and, unless a medical library is available, it is difficult to obtain the original article."

In his introduction, Dr. Sobotka states that the purpose of the book "is to give at least one method each for every contingency, and it has been attempted to select those methods which combine greatest accuracy with greatest simplicity" and hopes that it will be "of assistance to chemists and physicians in the correlation between routine analysis and clinical observation."

Because of the conciseness of the manual, no attempt has been made to include a complete bibliography for each method. However, the most recent reference is usually given for the benefit of those who may wish to refer to older articles on the

subject. Occasionally the particular modifications employed at the Mount Sinai Hospital are described.

The book is small and compact but contains twelve chapters dealing with subjects such as blood analysis, chemotherapy (sulfanilamide, arsenic), urine, cerebrospinal fluid, feces, toxicologic tests (arsenic, lead, mercury, barbiturates), gastric analysis, function tests (kidney, liver, miscellaneous as blood volume, dextrose tolerance test, prothrombin and creatine tolerance test), sex hormones, vitamins, and a miscellaneous chapter discussing the preparation of antigens, determination of calcium in pus, biliary and urinary calculi, sugar, the determination of the specific gravity, total solids, amount of protein, lactose and fat in milk, the preparation of dextrose solutions for intravenous use, and the determination of nitrogen by the micro-Kjeldahl method. The first chapter, entitled General Remarks, discusses measures and specifications, standard solutions, indicators and blood constituents and will undoubtedly be of service to laboratory workers.

Because of its conciseness the book should be used in conjunction with recognized textbooks on physiologic and pathologic chemistry. Nevertheless, it is another useful book on laboratory procedures, and many will probably consider it a worth while addition to the laboratory library.

Manual of Physical Diagnosis with Special Consideration of the Heart and Lungs. By Maurice Lewison, M.D., Professor of Physical Diagnosis, University of Illinois College of Medicine, Chicago, and Ellis B. Freilich, M.D., Associate Professor of Medicine, University of Illinois College of Medicine. In collaboration with George C. Coe, M.D., Instructor of Medicine, University of Illinois College of Medicine. Cloth. Price, $3. Pp. 317, with 75 illustrations. Chicago: Year Book Publishers, Inc., 1941.

The main purpose of this small volume is to present clearly and simply the fundamentals of physical diagnosis. As the authors say in the preface, "Based on an extensive teaching experience with medical students and postgraduate students, we believe that there is a need for a revision of teaching methods and for a book on the subject of physical diagnosis that gives the essentials without sacrificing important details. For these reasons, an attempt has been made to prepare a practical manual which stresses the physiologic principles underlying the findings in the normal chest and their alterations responsible for the findings in the abnormal chest." It is a pleasure to note that the authors stress that "a carefully taken detailed history and careful physical examination, utilizing the senses of sight, hearing and touch, will suffice for correct diagnosis in the vast majority of cases." The book is divided into four sections. Section I considers the subject of the history and general examination, section II examination of the respiratory system, section III examination of the cardiovascular system and section IV examination of the abdomen, genitalia, extremities and reflexes. The first three sections are excellent and well illustrated. Section IV considers only briefly examination of the nervous system and only the superficial and deep reflexes. Chronic adhesive pericarditis is considered, but chronic constrictive pericarditis and acute cardiac compression are practically omitted. Although similar to other books on physical diagnosis, this new one is practical and serviceable.

Lipidoses: Diseases of the Cellular Lipid Metabolism. By Siegfried J. Thannhauser, M.D., Ph.D., Associate Professor of Medicine, Tufts College Medical School, Boston. Edited by Henry A. Christian, A.M., M.D., LL.D. (Reprinted from Oxford Loose-Leaf Medicine). Cloth. Price, $6. Pp. 370, with 78 illustrations. New York, Toronto & London: Oxford University Press, 1940.

This monograph is undoubtedly the best on the subject in the English language. It was written originally as a section of Oxford Loose-Leaf Medicine, edited by Dr. Henry A. Christian. The treatment is systematic and comprehensive, and the didactic material is well illustrated by representative clinical cases and photographs. There are numerous references in the text, and a bibliography is appended to each chapter. The author has attempted to base his exposition on the known facts concerning the physiology and chemistry of lipid metabolism. Unfortunately these are relatively few as compared to other fields in metabolism. However, the little that is known is essential to the understanding and differentiation of the clinical material involved, and the author has made the most of it. Chapter I treats of the physiology and chemistry of lipid metabolism; chapter II of hyperlipemia; chapter III of xanthomatosis, including primary essential xanthomatosis (metaplastic reticular and histiocytic cholesterosis), secondary xanthomatosis (eruptive form of xanthoma) due to hyperlipemia, and localized xanthoma formation in inflammatory tissue and in true tumors; chapter IV of Gaucher's disease (metaplastic reticular and histiocytic cerebrosidosis); chapter V of Niemann-Pick's disease (metaplastic reticular and histiocytic sphingomyelinosis). Although many of the minor lipidoses are common and readily recognized, others are rather rare and hence obscure to many physicians. This volume should therefore be a welcome addition to the office reference shelf. It can hardly be said that correct diagnosis in this field leads to many therapeutic possibilities. However, recognition and continued observation of this interesting clinical material are essential to further progress in the subject and meanwhile add zest to the practice of medicine, which is occupied so much of the time with the commonplace.

Foundations of Neuropsychiatry. By Stanley Cobb, A.B., M.D., Bullard Professor of Neuropathology, Harvard Medical School, Boston. Second revised and enlarged edition of the work formerly known as A Preface to Nervous Disease. Cloth. Price, $2.50. Pp. 231, with 12 illustrations. Baltimore: William Wood & Company, 1941.

This book is a second revised and enlarged edition of the work formerly known as A Preface to Nervous Disease. The author confines his discussions to facts which have been proved to be accurate so that the student may understand the simpler workings of the central nervous system. Anatomic, physiologic and pathologic processes are closely interrelated. Because of this the book can be understood by the student. There are twelve chapters, on the autonomic nervous system, the cerebrospinal nervous system, motor integration and locomotion, the cerebral cortex, consciousness and the "mind body" problem, cerebral circulation, cerebrospinal fluid, general neuropathology, peripheral neuritis, special neuropathology, epilepsy and psychopathology. There is a limited bibliography. This book is recommended to all students and neuropsychiatrists.

Technology and Society: The Influence of Machines in the United States. By S. McKee Rosen and Laura Rosen. With an introductory chapter by William F. Ogburn. Cloth. Price, $4. Pp. 474, with illustrations. New York: Macmillan Company, 1941.

The machine age has been blamed for a great many of the troubles of modern society. In this volume the authors study the influence of the machines. One section is of particular interest to the medical profession, namely "Science in the Professions." The coming of the stethoscope, the electrocardiograph, the roentgen rays and innumerable other devices have greatly complicated medical service and proportionately increased medical costs. Another chapter in the book is called "A Case Study of the Doctor and the Hospital." It appears clear that the authors have been almost wholly dependent on the literature prepared by those who have been advocating a trend toward socialized medicine. Their references include little or nothing from the opposite point of view. Far too many of the volumes in the field of history and sociology now being offered to the American people are prepared by fellows working in the universities who apparently make little or no first hand investigation among the persons working in the industries or professions concerned. The results are apparent in the incompleteness of their presentations and in the inadequacy of the conclusions based on incomplete studies.

Foreign Bodies Left in the Abdomen: The Surgical Problems, Cases, Treatment, Prevention: The Legal Problems, Cases, Decisions, Responsibilities. By Harry Sturgeon Crossen, M.D., School of Medicine, Washington University, St. Louis, and David Frederic Crossen, LL.B., School of Law, Washington University. Cloth. Price, $10. Pp. 762, with 212 illustrations. St. Louis: C. V. Mosby Company, 1940.

This book was written by a surgeon and a lawyer, discussing the surgical and legal problems of foreign bodies left in the abdomen. It emphasizes to surgeons the danger of leaving a foreign body in the abdominal cavity, the best plan of treatment in such cases and the problem of prevention. From the legal point of view the consideration deals with the present law and rulings in the matter, including a presentation of the general practice and decisions and also of the special points raised by particular laws in the various states, and the responsibility of the various participants in the operating room. Numerous instructive case records are included, each of which is

analyzed. It is emphasized that no two cases are exactly alike in pathologic conditions or in the details of what must be done. The attention of the surgeon cannot be given to watching sponges and instruments, for he must concentrate it on the pathologic conditions encountered and the problem of their care. It is surprising how easily and quickly an object may be enfolded in the intestinal coils and carried out of sight. Methods of preventing their loss are discussed. The medicolegal aspects are well brought out, and the volume is worth while as an authority on this subject.

The March of Medicine. New York Academy of Medicine Lectures to the Laity [Number V], 1940. Cloth. Price, $2. Pp. 154. New York, Morningside Heights: Columbia University Press, 1941.

For five years the New York Academy of Medicine has been providing a series of lectures for the public through its Committee on Medical Information. The lectures have been partially endowed by liberal gifts from Dr. Orrin S. Wightman and more recently by Mr. Lucius N. Littauer. The series just made available include lectures on the inheritance of mental disease by Abraham Myerson, chemical warfare against disease by Perrin H. Long, the story of our knowledge of the blood by Paul Reznikoff, the story of viruses by Thomas M. Rivers, the ascent from bedlam by Richard H. Hutchings and the romance of bronchoscopy by Chevalier and Chevalier L. Jackson. These lectures are designed for an audience of better than high school education. To the man in the street the lectures for the most part would hardly be informative because of the difficulty in following the scientific discussion. The ones on bedlam and bronchoscopy are, however, phrased in a different tone and could be easily understood by any one. No doubt the editors of the volume would do well to ask for rewriting or revision of the more technical essays to bring them into comprehension by a greater number of people.

Human Hopes: Addresses & Papers on Education, Citizenship, & Social Problems. By Ray Lyman Wilbur, President, Stanford University. Cloth. Price, $3. Pp. 367. Stanford University: Stanford University Press; London: Oxford University Press, 1940.

The president of Stanford University is a distinguished speaker. His collected addresses and lectures give an impression of the social processes of the last two decades. He has always had an aptitude for succinct expression. He has always shown leadership in American education. Epigrams and anecdotes seem to bloom on every page. A few examples follow:

A man has to live with himself for a good many years.

Men have built great nations and great cities but have been unable to control ambition, greed or those forces which seem to arise within a people undergoing expansion in wealth and numbers.

Men recognizing common issues look at them together but from different angles. They are not unlike the young married couple whose firstborn had come. The father had purchased a beautiful—to him—baby carriage and brought it home. The new baby was properly installed therein and the young couple stood, filled with interest and enthusiasm, bending over the little one. The mother said "Can you believe it, that this belongs to us? Isn't it too wonderful?" He answered "It sure is. I can't see how that fellow can sell a carriage like that for $7.25." It all depends on what is being looked at—the baby or the baby carriage.

My hope is to encourage you to do the most that you can with yourselves, but to do it thoughtfully and with due respect for the rights of others. Remember the answer of the man to the excited neighbor who said "I have the right to shake my fist in any man's face." "Yes," was the reply, "but your right to shake your fist in my face ends exactly where my nose begins."

Edith Cavell. By Helen Judson. Cloth. Price, $2.50. Pp. 288, with portrait. New York: Macmillan Company, 1941.

Here is the history of Edith Cavell based on a study of all the newspaper and periodical documents of the time and from a study carried out in England by the author, who went especially for that purpose. She went also to Brussels to learn at first hand the available facts, and she studied also the contributions of Brand Whitlock and Hugh Gibson. The story is well told with sympathy and with admiration. War brings strong alinements. No doubt from the German point of view Edith Cavell through her aid to British soldiers was a serious menace. Nevertheless, such examples of heroism and self sacrifice as hers live far beyond the time when the accomplishments of war heroes are forgotten. This volume by Helen Judson makes the story come alive again as fresh as if it were in today's papers.

Leitfaden der Neurologie. Von Dr. med. habil. F. Laubenthal, Dozent für Neurologie und Psychiatrie an der Universität Bonn. Mit einem Geleitwort von Prof. Dr. K. Pohlisch. Cloth. Price, 10.35 marks. Pp. 252, with 52 illustrations. Leipzig: Georg Thieme, 1941.

This guide of neurology is divided into three parts: neurologic methods, neurologic syndromes and diseases, and an appendix. The first part discusses history, inspection, examination of the various functions and the spinal fluid and finally roentgen ray diagnoses. The second part is made up of twenty-eight chapters taking up in order of their appearance the myopathies, the peripheral nerves, disorders of the plexuses, syndromes and diseases of the pyramidal pathways, disorders of the posterior columns, gray matter, cerebellar systems, frontal, temporal, parietal and occipital lobes, various aphasias, apraxias and agnosias, diseases of the extrapyramidal system, corpus callosum, meninges, pituitary, discussion of epilepsy, disorders of the autonomic nervous system, trauma to the nervous system and syndrome of lightning stroke and electrocution. This is just another book without anything new. It cannot be used as a textbook. As a reference book it does not even come up to the books and compends already published in the United States.

A Conscientious Turncoat: The Story of John M. Palmer 1817-1900. By George Thomas Palmer. With an introduction by Lloyd Lewis. Cloth. Price, $3. Pp. 297, with portrait. New Haven: Yale University Press; London: Oxford University Press, 1941.

The author of this volume, Dr. George Thomas Palmer, is a physician whose grandfather John M. Palmer is the person described in this book. He was a Democrat who helped to found the Republican party and became a Republican governor of Illinois. Later he switched back to the Democratic party and became a successful lawyer and a Democratic U. S. Senator, and finally he headed the Gold Democratic third party and ran for president on the Gold-Democratic ticket in 1896. It is said of him that, when he was governor of Illinois, vetoing became such a habit with him that when a reporter put the Lord's prayer on his desk, he vetoed that. Dr. Palmer has written an excellent contribution to history. He shows a sense of the dramatic and he reflects one of the most fascinating periods in American history.

The Diseases of Women. By Trotula of Salerno. A translation of "Passionibus Mulierum Curandorum." By Elizabeth Mason-Hohl, M.D. Cloth. Price, $2. Pp. 52. Hollywood, California: The Author, 1940.

Medical historians know that for some years there has been an argument as to whether there ever was a woman physician known as Trotula who lived nine hundred years ago. The first edition of this book was printed in 1544. According to the author, Trotula was a woman physician who taught, treated diseases and wrote at the University of Salerno in the eleventh century and who, according to a church record, died in 1097, at which time a procession of mourners 2 miles long followed her to the grave. Indeed, she is said by the author to have had a husband and two children. There are German medical historians who insist that Trotula was actually a book written by a Roman freedman of the Empress Julia. Here, however, is a free English translation of the text published under the name of Trotula in 1544, a most valuable contribution to medical history.

Health: Mental, Moral and Physical. By Horace Wendell Soper, M.D., F.A.C.P. Cloth. Price, $1.50. Pp. 109. Boston: Christopher Publishing House, 1941.

This book contains chapters on health, a chapter of praise for the city of St. Louis, a chapter on Robert T. Ingersoll, a biographic note about a physician whom the author admires, a chapter on alcohol written during national prohibition times, a denunciation of milk as a human food except for infants, and the author's views on other phases of health and hygienic living. It is sketchy and in some instances at variance with accepted scientific concepts.

Pro biologichne znachennya sirki. [By] Prof. N. B. Medvedeva. [Biologic Significance of Sulfur.] Paper. Price, 6 krb. Pp. 103. Kiev: Vidavnitstvo Akademii Nauk URSR, 1940.

The monograph is in the nature of a general review of the subject, supplemented by a complete bibliography on the subject. Unfortunately, it is written in one of the least accessible of all European languages—the Ukrainian.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TOXICITY OF NITROPARAFFINS IN PAINT REMOVERS

To the Editor:—**In connection with the use of paint remover by the Air Corps, the question arises as to the toxicity of certain nitroparaffins contained therein. The paint remover is composed of 25 per cent nitroethane, the remainder being ethyl alcohol, ethyl methyl ketone, ethyl formate and toluene. Recommendations and suggestions are requested with regard to the toxicity and irritating properties of this compound and the maximum percentages of the irritating agents permissible therein.**

F. O. Carroll, Lieutenant Colonel, Air Corps, Dayton, Ohio.

ANSWER.—All the constituents of this paint remover, with the exception of ethyl alcohol, may be harmful under some circumstances. Ethyl formate, while rated as a minor skin irritant, has been used extensively in medicine, internally for gastroenteritis, externally as a local anesthetic and through inhalation as a respiratory sedative. Applied as a constituent of paint remover, it may decompose with the liberation of formic acid, which in concentrated strength is dangerously caustic to the skin and mucosa. It is not possible to fix any limit of safety, since injury depends more on the extent of decomposition, which is variable, than on the actual quantity present.

The toxicity of methyl ethyl ketone lately has been reported by Specht, Miller, Valaer and Sayers in "Acute Response of Guinea Pigs to the Inhalation of Ketone Vapors," Bulletin 176 of the National Institute of Health, 1940. In animal experiments, exposures were provided to 1, 2.5 and 5 per cent vapors. With the concentration at 2.5 per cent by volume, animals exhibited within ten minutes marked salivation, lacrimation and restlessness; within six hours of exposure most laboratory animals were dead after having exhibited loss of hearing, depressed heart and respiratory rates and generalized congestion due to vasomotor disturbances. Methyl ethyl ketone likewise is a mild cutaneous irritant. This substance may not be regarded as highly dangerous as industrially used, since one thousand parts per million are believed to be within safe limits.

Nitroparaffins, including nitroethane, are regarded as toxic by some investigators (Machle, Scott and Treon, *J. Indust. Hyg. & Toxicol.* **22**:315, 1940). These authors conclude that:

Nitroparaffins are toxic and precautions are necessary for their safe handling.

Concentrations of 0.05 per cent vapor of nitromethane and of nitroethane in air were found to be safe and tolerable concentrations for guinea pigs, rabbits and monkeys.

A concentration of 0.1 per cent nitromethane vapor in air caused the death of one monkey and may be assumed to be a dangerous concentration for man.

Lethal concentrations for animals are far below narcotic concentrations, and beginning narcosis cannot safely be used as a warning of dangerous concentrations.

Derivatives of the nitroparaffins studied have no appreciable vapor pressure at ordinary tempereatures. Danger from their use appears to be limited to accidental ingestion.

The concentration of toluene should not exceed two hundred parts per million in the atmosphere breathed by workers. While the order of toxicity is lower than that for its homologue benzene, this substance is a cause of acute and chronic forms of injury. In any large group exposed some cutaneous involvement is almost inevitable, and systemic poisoning from toluene is likely if large areas of evaporation are provided or work occurs in confined areas.

HYDROGEN ION CONCENTRATION OF THE SKIN

To the Editor:—**Can you give me some information regarding the p_H of the normal skin, as well as the vesiculated skin of eczema, herpes zoster, herpes simplex and impetigo? Where can I find reference articles on this subject? It occurred to me that if the p_H could be determined of exudate arising from vesicular lesions it might be possible to adjust the p_H of the medicament employed, as is done in ophthalmic lotions in adjusting to the p_H of tears.**

A. S. Tenney, M.D., East Orange, N. J.

ANSWER.—According to Pillsbury the p_H of the surface of the skin shows wide variations in different areas and in different subjects. The average p_H for each region is as follows: the flexor surface of the forearm, 5.1; the extensor surface of the forearm, 5.3; the flexor of the index finger, 5.4; the groin, 5.7; the axilla, 5.8, and the fourth interdigital space of the foot, 6.5.

According to Blank, who measured the p_H of the normal cutaneous surface of adults ranging in age from 19 to 27 years with the glass electrode, on exposed areas it was from 4 to 7, but most of the readings were between 4.2 and 5.6. The p_H varies more from person to person in women than in men. The average p_H of women is about 0.5 higher than that of men. The extensor surfaces of the arms are slightly more alkaline than the corresponding flexor surfaces. The antecubital region is the most acid area on the arm.

Blank furthermore stated that there were wide variations in the daily measurements of the p_H of the cutaneous surfaces of 5 adult women with no apparent lesions whom he examined. Two of these showed variations daily which repeated themselves at intervals of the menstrual cycle. This, however, was not true of 3 of the women examined. No correlation between the p_H of the cutaneous surface and the environmental temperature could be definitely established, although there was some indication that the p_H dropped as the temperature increased.

According to Pillsbury the intact skin is able to withstand solutions of a p_H ranging from 2 (three times that of normal hydrochloric acid) to 12.6. Abraded skin reacts violently to solutions having a p_H of 1.2, a slightly purulent ulcer being produced, healing slowly and leaving a scar. The response of abraded skin to alkaline solutions of a p_H up to and including 12.6 is no worse than that of intact skin. Acid solutions applied to normal skin show almost no tendency to a rise in p_H. Alkaline solutions show a definite and regular fall in p_H on contact with the skin.

Pillsbury used acid and alkaline buffer ointments on various types of lesions but could not find any appreciable effect of the p_H per se of the material as compared with the unbuffered medicaments. Some authors have claimed increased benefits, on the other hand, from the use of applications buffered at definite p_H values. The evidence for such claims, however, seems to be meager and has not gained general acceptance.

References:

Pillsbury, D. M., and Shaffer, B.: Cutaneous Reaction, with Reference to Surface p_H, Reaction to Ointments and Solution of Different p_H and Effect of Skin in Modifying p_H of Applied Solutions, *Arch. Dermat. & Syph.* **39**: 253 (Feb.) 1939.

Blank, I. H.: Measurement of p_H of the Skin Surface: II. p_H of Exposed Surfaces of Adults with No Apparent Skin Lesions, *J. Invest. Dermat.* **2**: 75 (April) 1939.

DETERMINATION OF BASAL METABOLISM IN MENTAL DISORDERS

To the Editor:—**The determination of the basal metabolic rate is generally conceded to be one of the most important diagnostic procedures in determining the degree of thyroid activity. One of the basic parts of the test is the maximum elimination of physical exertion and, to a lesser degree, emotional disturbance. It is desirable to determine the basal metabolic rate of patients with certain mental diseases who are too highly excited to be cooperative for the usual conditions of the test. Of what value would a determination of the basal metabolism be if such a patient was first narcotized, as with a heavy dose of sodium amytal or paraldehyde? What influence would the administration of milder sedatives have on the basal metabolism? In a case of thyrotoxicosis of some severity would it render the reading valueless? J. M. Read, in The Journal, June 17, 1922, page 1887, gave a "prediction formula" which he claimed gives some idea of thyroid activity: basal metabolic rate = 0.683 (pulse rate + 0.9 pulse pressure) — 71.5. Is this formula of practical value?**

M.D., Ohio.

ANSWER.—There are two important considerations: 1. Like other laboratory procedures, the determination of the basal metabolic rate is subject to error and therefore must always be correlated with the clinical picture. 2. It is important to determine the level of metabolism by having the test repeated frequently on different days. Little importance should be attached to a single reading. Repetition of the test on different days will eliminate the element of fear, so that sedatives rarely will be necessary except for the most unstable patients, of whom the determination of the basal metabolism is of doubtful value anyway. A mild sedative given the night before the test will not interfere with its accuracy, but a narcotizing dose may throw it off to a considerable extent. In patients with thyrotoxicosis sedatives are not often necessary, and, when they are, moderate doses the night before the test usually suffice. It is only on the rarest occasions that any difficulty is encountered. It is impossible to secure an accurate estimation of the basal metabolism of some patients because of rapid breathing or irregular breathing or both. This difficulty is encountered more often among patients who have psychoneuroses than in those with thyrotoxicosis. There is a rough correlation between the pulse rate and the pulse pressure on the one hand and the basal metabolism on the other, but this correlation is not close enough for accurate estimation of the basal metabolism from the pulse rate and the pulse pressure. The "prediction formula" of Read is therefore of interest but is not especially valuable for clinical use.

PROBABLE ARTERIAL EMBOLISM OF LEGS

To the Editor:—**A woman aged 56 has chronic cholecystitis and auricular fibrillation, both of several years' duration. She takes 1½ grains (0.1 Gm.) of digitalis every night before going to bed, and a recent electrocardiogram showed moderate effect of the digitalis. In personality, she is nervous but active. Her blood pressure is 170 systolic and 110 diastolic. One night she was unable to sleep, and after several hours in bed she suddenly suffered a severe pain in the right toe and then in the left toe, and then both legs became painful up to the knees. Observation of the extremities by members of her family showed that both lower extremities were blanched, while she was in agony from the excruciating pain. I arrived about an hour after it started, after she had taken ½ grain (0.03 Gm.) of codeine with 3 grains (0.2 Gm.) of acetylsalicylic acid and after the extremities had been given a brisk massage. Color was returning at that time, and she felt intense numbness and a tingling sensation. Another ½ grain of codeine was given, and 2 cc. of caffeine with sodium benzoate was injected intramuscularly. In about half an hour she felt well again. The next morning she bathed her feet in water which to her was tepid but to her assistant was hot, but she had no pains. I felt the pulsation of the dorsalis pedis when I saw her that night. She had had a similar but more severe attack the previous year but none since then. Can you tell me whether this is a form of Raynaud's disease in spite of the fact that the upper extremity has never been involved? Can you suggest a better diagnosis and treatment? Although there has been a year's interval between attacks, I should like an explanation of the phenomenon.**

M.D., Connecticut.

ANSWER.—Raynaud's disease is a definite syndrome characterized by intermittent episodes of discoloration, limited almost entirely to the fingers or toes. When it is fully developed, the syndrome is characterized by pallor and followed by cyanosis and then by rubor. Such episodes of discoloration are almost always induced by exposure to cold, but occasionally they occur as a result of emotional strain. In the early stages the digits assume normal color within a few minutes after the nervous strain has been relieved or the extremities have been exposed to warmth instead of to cold. Raynaud's disease is almost never associated with pain, although numbness and awkwardness of the extremities are frequently associated with the pallor and cyanosis, and tingling is frequently associated with the stage of redness. It seems certain that the patient whose history is outlined does not have Raynaud's disease. The history is suggestive of sudden arterial occlusion associated with severe secondary spasm of the main arteries of the lower extremities. It is probable that as a result of the auricular fibrillation there are thrombi on the walls of the auricles of the heart, parts of which become detached at times to form emboli to the lower extremities. Such an event would explain the blanching of the skin and the severe pain. The disappearance of pain, the return of normal color to the skin and the return of pulsations in the peripheral arteries in the case of arterial embolism is apparently due to relaxation of the arterial spasm which results from the lodging of the embolus in the peripheral arteries. The problem in this case is the prevention of embolism, and the advisability of restoration of normal cardiac rhythm by using quinidine sulfate should be considered.

There are three important "don'ts" in the treatment of sudden arterial occlusion: Don't delay treatment for more than two or three hours, don't elevate the extremity and don't subject it to heat which exceeds by more than a few degrees the temperature of the body. Delayed treatment means a poor prospect of recovery in those instances in which recovery would not occur spontaneously. Until the custom disappears entirely it cannot be emphasized too frequently that tissue deprived of its normal blood supply does not tolerate heat well. Hot water bottles are frequently of a temperature which exceeds 150 F. and will almost invariably provoke burns if allowed to come in contact with the skin. It is believed that recovery would have occurred in many cases if burns had not resulted from hot water bottles.

Continuous intravenous infusion of appropriate amounts of heparin may be begun at once. The time for coagulation of the blood should be kept as nearly as possible at three times normal. This serves to prevent extension of thrombosis and to prevent the thrombosis which may occur after operation if embolectomy is performed. Treatment with heparin should be continued until recovery or until gangrene is inevitable. If successful operation is performed, treatment with heparin should be continued for several days.

Opiates should be given immediately to control pain as in myocardial infarction. The ingestion of alcoholic drinks may be of benefit, apparently because alcohol is an antispasmodic as well as an anodyne. The extremity should be wrapped in cotton, which can be held in place with a roller bandage to preserve the natural warmth of the extremity. A cradle, open at one end and containing not more than one or two bulbs, may be placed over the extremity. The temperature of the air about the limb should not exceed 105 F. The extremity should be placed in a dependent position. When the legs are involved, the head of the bed should be elevated; when the arms are involved, the patient should be in the semisitting position. Vasodilators should be given to relieve arterial spasm, if present. Papaverine hydrochloride, which is a vasodilator when given intravenously or into the artery proximal to the area of occlusion, in amounts of 0.032 Gm. will produce improvement in the circulation of the limb within a few minutes if it is effective at all. Care should be taken that the solution of papaverine hydrochloride is physiologically active. If the first injection does not cause improvement, it is questionable that further trial with this drug will benefit the circulation. If improvement follows use of papaverine, the injection can be repeated whenever there is evidence of failing circulation to the extremity. The temperature of the environmental air, that is, the room temperature, should be kept at about 90 F. Hot packs may be applied continuously to an extremity not involved or to the involved extremity proximal to the embolus, as both procedures should produce vasodilatation. Intermittent venous occlusion may help. An ordinary sphygmomanometer cuff placed well proximal to the site of occlusion may be alternately inflated to diastolic blood pressure and deflated at two minute intervals for several hours. The Sanders oscillating bed, which performs postural exercises for the patient, may help, particularly if treatment is carried out in a warm room. Short wave diathermy may produce vasodilatation. Electromagnetic induction by means of a cable arranged in a pancake formation over the lumbosacral area is a superior method.

The use of intermittent negative and positive pressure as described by Herrmann and Reid has been successful in their hands and should be used if a machine is available. On the assumption that one of the chief requisites for a favorable outcome is the induction of collateral arteries to assume a heightened function of transportation of blood, spinal anesthesia may be tried when the lower extremities are involved, as this procedure produces maximal vasodilatation. If the procedures outlined do not produce a rapid improvement in the circulation, surgical removal of the clot should be considered when occlusion is due to an embolus. As in the treatment of diabetic coma, constant attendance of a physician is required until the situation is relieved or an unfavorable outcome is definitely established. This duty cannot be judiciously delegated to nurses or relatives. If the diagnosis is made promptly and the treatment outlined is carried out with celerity and constant attention, the results will be much better than they are when less rational, or haphazard, regimens are carried out.

PREVENTION OF CALCIUM CYANAMIDE DERMATITIS

To the Editor:—**What precautions can be taken to prevent cutaneous irritations appearing in men handling calcium cyanamide? This is a black powder manufactured by North American Cyanamid, Ltd., of Ontario, Canada. I understand that it is used as a fertilizer. The outstanding subjective complaint is one of itching.**

Irving Lynn, M.D., Jersey City, N. J.

ANSWER.—Calcium cyanamide ($CaCN_2$) is used as a fertilizer and in the manufacture of various chemical compounds such as ammonia, sodium cyanide, urea, guanidine compounds and certain synthetic resins. Dermatitis is of frequent occurrence among workers coming in contact with it. Calcium cyanamide contains considerable lime (calcium oxide), which contributes to its irritating effect. Calcium cyanamide not only causes dermatitis but will cause severe edema of the mucous membranes of the eyes, nose and throat if the workers exposed to it indulge in alcoholic liquors.

Dermatitis and other toxic manifestations occurring among those exposed to calcium cyanamide can be prevented by totally enclosed methods of manufacture, by the wearing of protective clothing and daily changing to clean work clothing and by taking cleansing shower baths after exposure.

For persons spreading cyanamide as a fertilizer, the wearing of protective clothing and respirators and the shower baths after work are to be recommended. Protective clothing should be impermeable to dust and may consist of the new synthetic resins as described by Schwartz, Warren and Goldman (Clothing for Protection Against Occupational Skin Irritants, *Pub. Health Rep.* **55**:1158 [June 28] 1940).

If respirators are not used, a little petrolatum put into the nostrils will help to protect the septum against ulceration, and several layers of gauze tied around the nose and mouth are often preferred by workers to respirators.

ATTACKS OF ABDOMINAL PAIN

To the Editor:—A woman aged 35 has come to me complaining of intermittent attacks of abdominal pain over a period of four years. The first attack was associated with pain sufficiently severe to cause her to double up on the floor; during her contortions the pain suddenly ceased, and she was feeling perfectly well by the time her physician arrived. In the last four weeks she had had two attacks. The pain is referred to just below the xiphoid process. The character is described as a "boring in" pain, pressing, even constricting without any radiation whatever but causing some difficulty in breathing. The abdomen becomes "swollen and hard," and while there is no desire to move the bowels the patient feels that, if she could, it would relieve the sensation of swelling and hardness felt in the abdomen. There is no associated sweating, nausea, vomiting or elevation of temperature. The later attacks differ in no essential from the earlier episodes except that now she experiences a feeling of fatigue and weakness for several days after each attack. Four weeks ago I saw her in an attack, and the only abnormalities were a moderately tender spot just below the xiphoid process and a little muscular spasm overlying the area. There was no other abnormality such as fever, perspiration, pallor or cyanosis. The pain was so severe that I gave her ⅙ grain (0.01 Gm.) of morphine intravenously, which instantly relieved her. A week later she had another attack with greater pain and well marked muscular spasm over the tender epigastric spot. There was also tenderness over the sigmoid and pelvic parts of the colon. Again morphine relieved her, but slight tenderness was still present in the epigastrium. Two weeks later she felt another attack starting, and, in trying to get into a position of comfort, she turned on her left side and was instantly relieved of her pain. Roentgenograms showed a diverticulosis affecting the proximal half of the transverse colon and the pelvic and sigmoid sections of the colon. Roentgenograms of the stomach taken from different angles showed no abnormalities. The physical examination showed the patient to be otherwise essentially normal except for a slight vaginal discharge. Aside from the additional complaints of severe constipation for eight to ten years and flatulence, she would say that she enjoys good health. Her past history includes an appendectomy and tonsillectomy and adenoidectomy about eight years ago; also a dilation and curettage two years ago. The menses seem perfectly normal. I would be grateful for advice in regard to this patient and for an explanation of her symptoms if one can attribute her complaint to the roentgen data. I have thought of the possibility of coronary disease, but the relief of attacks with change of position and the absence of other symptoms seem definitely to rule out that diagnosis.

M.D., New York.

ANSWER.—This woman has a peculiar clinical picture. However, there are several apparent omissions in the clinical story. In the first place, it is important to know the patient's weight, her habitus, whether or not she has been married and, if so, how many children she has had, what examination of the urine and stools showed, the findings on cholecystography, her blood pressure, and whether there was any leukocytosis during the attacks. It might also be well to have an intravenous pyelogram.

The fact that the patient is relieved by turning on her left side is suggestive of a ptosed or obstructed left renal pelvis. There is a possibility of the left kidney being so loosened from its bed that it "flops" over to the midline and that when the patient turns on her left side it rotates into its normal position. There is no reason for a patient who has an allergic manifestation to be relieved by turning on her left side.

The only other possibility is some peculiar intra-abdominal hernia that might be relieved by the patient's change in position. If the attacks are on the basis of a diverticulosis, the patient should have some localized pain over the region of the diverticula. It is notorious for nonsurgical pain to be related to the genitourinary tract, and, from the facts given, one would have to lean toward this diagnosis.

SERUM PROOFING OF SUTURE MATERIAL

To the Editor:—I would greatly appreciate clarification of the term "serum proofed" suture material. My interest is concerned with the question as to whether such cotton as recommended need be specially processed or used as bought after being sterilized properly.

Ralph Mostwill, M.D., Baltimore.

ANSWER.—Moisture proofing or serum proofing is a process employed for the impregnation of a suture material with wax or waxy substances. Suture materials composed of multiple strands, such as silk, are serum proofed to prevent fraying and consequent breaking and to improve the sliding quality of the knot. Originally wax impregnation or "serum proofing" of silk was performed to delay or prevent the decrease in tensile strength that occurred in the material after contact with the fluids or serum of a wound. This ideal has been only partially fulfilled. Untreated silks when wet decrease in tensile strength from 18 to 39 per cent; treated (serum proofed) silks decrease somewhat less, from 0 to 25 per cent.

Cotton has been shown to increase in tensile strength when wet; hence any process that interferes with complete wetting, such as serum proofing, interferes with the increase in strength that occurs after this material is bathed in tissue fluids. Moreover, serum proofed cottons are 12 to 35 per cent weaker than cottons of similar brand and diameter that have not been so treated. The deleterious effects of serum proofing of cotton outweigh any of the gains of such processing.

Cotton should be used untreated, boiled for ten to twenty minutes and used while wet. Wetting not only increases the tensile strength of cotton but to some extent prevents fraying and improves the sliding quality of the knot.

PHYTOBEZOAR FROM PERSIMMONS

To the Editor:—An article (Am. J. Surg. **51**: 432 [Feb.] 1941) by A. L. Cohn and A. S. White reports a case of phytobezoar. I should like to know if any one has determined what part of the persimmon causes the formation of the phytobezoar, if the skin and small divisional membranes have anything to do with the formation of this foreign body and if any one has questioned patients with this condition as to whether they have eaten only the pulp or the entire persimmon. What is the percentage of the occurrence of these foreign bodies in relation to formation of the ulcers?

M.D., California.

ANSWER.—Many theories have been advanced to explain the development of phytobezoars, but one of the most plausible is that presented by Izumi, Isida and Iwamoto (*Jap. J. M. Sc., tr. II, Biochem.* **2**:21 [March] 1933). Unripe persimmons contain an astringent, soluble shibuol, a phlobatannin composed of phloraglucin and gallic acid. As the fruit ripens, the shibuol coagulates, becoming insoluble and no longer astringent, but even in the ripe fruit traces of soluble shibuol may be detected, especially under the skin and around the calix. Soluble shibuol is coagulated by dilute mineral acids, and Izumi and his co-workers produced artificial persimmon balls experimentally by incubating small pieces of the fruit in gastric juice. This occurred within a few hours and with no other digestive juice. Izumi and his associates expressed the belief that in the stomach soluble shibuol is transformed into a sticky coagulum which cements the pieces of skin and seeds which may be present into a ball. However, the presence of large amounts of food matter in the stomach interferes with the contact and aggregation of the fragments of the persimmon. Accordingly, an empty stomach and the eating of slightly unripe persimmons or eating persimmons without peeling them predispose to the development of persimmon bezoars. DeBakey and Ochsner (*Surgery* **4**:934 [Dec.] 1938; **5**:132 [Jan.] 1939) found gastroduodenal ulceration in 23 of 94 collected cases, an incidence of 24.4 per cent.

EARLY METHODS OF TREATING HERNIA

To the Editor:—An intelligent man, now in the seventies, has described for me the successful repair of a reducible inguinal hernia on himself about fifty years ago by a physician named Barnes, who specialized in this work in or near the present city of Glens Falls, N. Y. The technic is the matter of interest. The hernia having been replaced, a needle was passed through the skin, worked "in and out" under the skin, then, having made an exit, was left in place several days, during which time a firmly fitting truss pad was worn. After several days the needle was removed and the pad loosened gradually during the following few weeks. The patient was ambulant at all times. (I presume the operator approximated the various tissues and relied on the needle irritation to bring about union, taking care to avoid puncturing the bowel.) Can you give me any information concerning this technic and its application?

M.D., New York.

ANSWER.—The earliest methods of treating inguinal hernia consisted in incising the skin and pushing a red hot iron into the inguinal canal. A search of the literature shows no reference to the method described, i. e. "passing a needle through the skin and bringing it in and out at various levels along the canal and thereafter applying a truss with the needle in position." Needless to say such a procedure would be hazardous indeed, first because of the danger of injuring the contents of the sac, second because of infection and last because of the hazard of breaking off the needle in the tissues, which in itself would be a calamity. It would seem doubtful if a cure could be effected in this way, as it is a blind procedure.

SULFANILAMIDE AS A BLADDER WASH

To the Editor:—Has a solution of sulfanilamide been used in a bladder wash for uncomplicated cystitis of colon bacillary origin? If so, can you give directions for the amount and strength of the solution and state whether it is used as a wash or an instillation?

Geraldine H. Crocker, M.D., Granville, Ohio.

ANSWER.—Solution of sulfanilamide powder has been used for bladder washings in cases of colon bacilluria. This is used in the form of an 0.8 per cent solution for instillation or lavage. It may be used two or three times daily, or, if the patient is hospitalized, a two way catheter may be inserted and the solution used as a continuous irrigation.